



THE IMPERIAL ENCYCLOPEDIA AND DICTIONARY

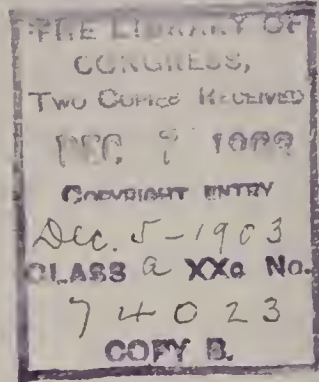
A LIBRARY OF UNIVERSAL
KNOWLEDGE AND AN UN-
ABRIDGED DICTIONARY OF
THE ENGLISH LANGUAGE
UNDER ONE ALPHABET

IN FORTY VOLUMES

VOLUME 26
NEWCOMB—OLDBURY

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SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(·) is the mark dividing words respelt phonetically into syllables: (ˈ), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound symbols and Marks for Pronunciation.
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<i>ā</i> ...	mate, fate, fail, aye.....	<i>māt, fāt, fāl, ā.</i>
<i>ă</i> ...	mat, fat	<i>măt, făt.</i>
<i>â</i> ...	far, calm, father	<i>fâr, kâm, fá' thêr.</i>
<i>ä</i> ...	care, fair	<i>câr, fâr.</i>
<i>aw</i> ...	fall, laud, law	<i>fawl, lawd, law.</i>
<i>ē</i> ...	mete, meat, feet, free	<i>mēt, mīt, fēt, frē.</i>
<i>ě</i> ...	met, bed	<i>mět, běd.</i>
<i>é</i> ...	her, stir, heard, cur	<i>hêr, stêr, hêrd, kêr.</i>
<i>î</i> ...	pine, ply, height	<i>pîn, plî, hît.</i>
<i>ï</i> ...	pin, nymph, ability.....	<i>pîn, nîmf, ä-bîl'î-tî.</i>
<i>ō</i> ...	note, toll, soul.	<i>nôt, töl, söl.</i>
<i>ö</i> ...	not, plot	<i>nôt, plît.</i>
<i>ô</i> ...	move, smooth	<i>môv, smôth.</i>
<i>ö</i> ...	Goethe (similar to <i>e</i> in her)...	<i>gö tch.</i>
<i>ow</i> ...	noun, bough, cow	<i>noun. bow, kow.</i>
<i>oy</i> ...	boy, boil	<i>boy, boyl.</i>
<i>û</i> ...	pure, dew, few	<i>pûr, dû, fû.</i>
<i>û</i> ...	buil, come, tough	<i>bûd kûm, tûf.</i>
<i>û</i> ...	full, push, good	<i>fûl, pûsh, gûd.</i>
<i>ü</i> ...	French plume, Scotch guid.	<i>plûm, gûd.</i>
<i>ch</i> ...	chair, match	<i>châr, mäch.</i>
<i>ch</i> ...	German buch, Heidelberg,	
	Scotch loch (guttural).....	<i>bôch, hî'dêl-bêrch, lôch.</i>
<i>g</i> ...	game, go, gun	<i>gâm, gô, gûn.</i>
<i>j</i> ...	judge, gem, gin	<i>jûj, jêm, jîn.</i>
<i>k</i> ...	king, cat, cot, cut.....	<i>kîng, kût, kêt, kût.</i>
<i>s</i> ...	sit, scene, cell city, cypress.	<i>sît, sên, sîl, sît'î, sî'prêš.</i>
<i>sh</i> ...	shun, ambition	<i>shûn, ïm bîsh'ûn.</i>
<i>th</i> ...	thing, breath	<i>thîng, brêth.</i>
<i>th</i> ...	though, breathe	<i>thô, brêth.</i>
<i>z</i> ...	zeal, maze muse	<i>zîl, mâz, mûz.</i>
<i>zh</i> ...	azure, vision.....	<i>äzh'er, vîzh'ûn.</i>

ABBREVIATIONS USED IN THIS WORK.

a. or adj. adjective
 A.B. Bachelor of Arts
 abbr. abbreviation, abbreviated
 abl. or abla. ablative
 Abp. Archbishop
 abt. about
 Acad. Academy
 acc. or ac. accusative
 accom. accommodated, accommodation
 act. active
 A.D. in the year of our Lord [*Anno Domini*]
 Adj. Adjutant
 Adm. Admiral
 adv. or ad. adverb
 A. F. Anglo-French
 Ag. Silver [*Argentum*]
 agri. agriculture
 A. L. Anglo-Latin
 Al. Aluminium
 Ala. Alabama
 Alb. Albanian
 alg. algebra
 A.M. before noon [*ante meridiem*]
 A.M. Master of Arts
 Am. Amos
 Amer. America, -n
 anat. anatomy, anatomical
 anc. ancient, anciently
 A.N. M. in the year of the world [*Anno Mundi*]
 anon. anonymous
 antiq. antiquity, antiquities
 aor. aorist, -ic
 app. appendix
 appar. apparently
 Apr. April
 Ar. Arabic
 arch. architecture
 archæol. archæology
 arith. arithmetic
 Ark. Arkansas
 art. article
 artil. artillery
 AS. Anglo-Saxon
 As. Arsenic
 Assoc. Association
 asst. assistant
 astrol. astrology
 astron. astronomy
 attrib. attributive
 atty. attorney
 at. wt. atomic weight
 Au. Gold [*Aurum*]

A.U.C. in the year of the building of the city (Rome) [*Anno Urbis conditæ*]
 Aug. August
 aug. augmentative
 Aust. Austrian
 A. V. authorized version [of Bible, 1611]
 avoir. avoirdupois
 B. Boron
 B. Britannie
 b. born
 Ba. Barium
 Bart. Baronet
 Bav. Bavarian
 bl.; bbl. barrel; barrels
 B.C. before Christ
 B.C.L. Bachelor of Civil Law
 B.D. Bachelor of Divinity
 bef. before
 Belg. Belgic
 Beng. Bengali
 Bi. Bismuth
 biog. biography, biographical
 biol. biology
 B.L. Bachelor of Laws
 Bohem. Bohemian
 bot. botany, botanical
 Bp. Bishop
 Br. Bromine
 Braz. Brazilian
 Bret. Breton
 Brig. Brigadier
 Brit. British, Britannica
 bro. brother
 Bulg. Bulgarian
 bush. bushel, bushels
 C. Carbon
 c. century
 Ca. Calcium
 Cal. California
 Camb. Cambridge
 Can. Canada
 Cant. Canterbury
 cap. capital
 Capt. Captain
 Card. Cardinal
 carp. carpentry
 Cath. Catholic
 caus. causative
 cav. cavalry
 Cd. Cadmium
 Ce. Cerium
 Celt. Celtic
 cent. central
 cf. compare [*confer*]
 ch or chh. church

ABBREVIATIONS.

Chal.....	Chaldee	diff.....	different, difference
chap.....	chapter	dim.....	diminutive
chem.....	chemistry, chemical	dist.....	district
Chin.....	Chinese	distrib.....	distributive
Chron.....	Chronicles	div.....	division
chron.....	chronology	doz.....	dozen
Cl.....	Chlorine	Dr.....	Doctor
Class.....	Classical [= Greek and Latin]	dr.....	dram, drams
Co.....	Cobalt	dram.....	dramatic
Co... ..	Company	Dut. or D...Dutch	
co.....	county	dwt.....	pennyweight
cog.....	cognate [with]	dynam or	
Col.....	Colonel	dyn.....	dynamics
Col.....	Colossians	E.....	Erbium
Coll.....	College	E. or e.....	East, -ern, -ward
colloq.....	colloquial	E. or Eng.....	English
Colo.....	Colorado	Eccl.....	Ecclesiastes
Com.....	Commodore	eccl. or	ecclesiastical [affairs]
com.....	commerce, commercial	eccles.....	
com.....	common	ed.....	edited, edition, editor
comp.....	compare	e.g.....	for example [ex gratia]
comp.....	composition, compound	E. Ind. or	East Indies, East
compar.....	comparative	E. I.....	
conch.....	conchology	elect.....	electricity
cong.....	congress	Emp.....	Emperor
Congl.....	Congregational	Encyc.....	encyclopedia
conj.....	conjunction	Eng. or E.....	English
Conn or Ct.....	Connecticut	engin.....	engineering
contr.....	contraction, contracted	entom.....	entomology
Cop.....	Coptic	env. ext.....	envoy extraordinary
Cor.....	Corinthians	ep.....	epistle
Corn.....	Cornish	Eph.....	Ephesians
corr.....	corresponding	Episc.....	Epi-copal
Cr.....	Chromium	eq. or =.....	equal, equals
crystal.....	crystallography	equiv.....	equivalent
Cs.....	Cæsium	esp.....	especially
ct.....	cent	Est.....	Esther
Ct. or Conn.....	Connecticut	estab.....	established
Cu.....	Copper [Cuprum]	Esthon.....	Esthonian
cwt.....	a hundred weight	etc.....	and others like [et cetera]
Cyc.....	Cyclopædia	Eth.....	Ethiopic
D.....	Didymium	ethnog.....	ethnography
D. or Dut.....	Dutch	ethnol.....	ethnology
d.....	died	et seq.....	and the following [et sequentia]
d. [l. s. d.].....	penny, pence	etym.....	etymology
Dan.....	Daniel	Eur.....	European
Dan.....	Danish	Ex.....	Exodus
dat.....	dative	exclam.....	exclamation
dau.....	daughter	Ezek.....	Ezekiel
D. C.....	District of Columbia	Ezr.....	Ezra
D.C.L.....	Doctor of Civil [or Common] Law	F.....	Fluorine
D.D.....	Doctor of Divinity	F. or Fahr.....	Fahrenheit
Dec.....	December	f. or fem.....	feminine
dec.....	declension	F. or Fr.....	French
def.....	definite, definition	fa.....	father
deg.....	degree, degrees	Fahr. or F.....	Fahrenheit
Del.....	Delaware	far.....	farriery
del.....	delegate, delegates	Fe.....	Iron [Ferrum]
dem.....	democratic	Feb.....	February
dep.....	deputy	fem. or f.....	feminine
dep.....	deponent	fig.....	figure, figuratively
dept.....	department	Fin.....	Finnish
deriv.....	derivation, derivative	F.—L.....	French from Latin
Deut.....	Deuteronomy	Fla.....	Florida
dial.....	dialect, dialectal	Flem.....	Flemish
diam.....	diameter	for.....	foreign
Dic.....	Dictionary	fort.....	fortification
		Fr. or F.....	French
		fr.....	from

ABBREVIATIONS.

freq.....frequentative
 Fris.....Frisian
 ft.....foot, feet
 fut.....future
 G. or Ger...German
 G.....Glucinium
 Ga.....Gallium
 Ga.....Georgia
 Gael.....Gaelic
 Gal.....Galatians
 gal.....gallon
 galv.....galvanism, galvanic
 gard.....gardening
 gen.....gender
 Gen.....General
 Gen.....Genesis
 gen.....genitive
 Geno.....Genoese
 geog.....geography
 geol.....geology
 geom.....geometry
 Ger.....German, Germany
 Goth.....Gothic
 Gov.....Governor
 govt.....government
 Gr.....Grand, Great
 Gr.....Greek
 gr.....grain, grains
 gram.....grammar
 Gr. Brit....Great Britain
 Gris.....Grisons
 gun.....gunnery
 H.....Hegira
 H.....Hydrogen
 h.....hour, hours
 Hab.....Habakkuk
 Hag.....Haggai
 H. B. M....His [or Her] Britan-
 nic Majesty
 Heb.....Hebrew, Hebrews
 her.....heraldry
 herpet.....herpetology
 Hg.....Mercury [*Hydrar-*
 gyrum]
 hhd.....hog-head, hogsheads
 Hind.....Hindustani, Hindu,
 or Hindi
 hist.....history, historical
 Hon.....Honorable
 hort.....horticulture
 Hos.....Hosea
 Hung.....Hungarian
 Hydros....Hydrostatics
 I.....Iodine
 I.; Is.....Island; Islands
 Icel.....Icelandic
 ichth.....ichthyology
 Ida.....Idaho
 i.e.....that is [*id est*]
 Ill.....Illinois
 illus.....illustration
 impera or
 impr.....imperative
 impers...impersonal
 impf or imp imperfect
 impf p. or
 imp.....imperfect participle
 improp....improperly
 In.....Indium
 in.....inch, inches
 incept....inceptive
 Ind.....India, Indian
 Ind.....Indiana

ind.....indicative
 indef.....indemnity
 Indo-Eur...Indo European
 inf.....infantry
 inf or infin.infinitive
 instr.....instrument, -al
 int.....interest
 intens....intensive
 interj. or
 int.....interjection
 interrog...interrogative pro-
 noun
 intr. or
 intrans...intransitive
 Io.....Iowa
 Ir.....Iridium
 Ir.....Irish
 Iran.....Iranian
 irr.....irregular, -ly
 Is.....Isaiah
 It.....Italian
 Jan.....January
 Jap.....Japanese
 Jas.....James
 Jer.....Jeremiah
 Jn.....John
 Josh.....Joshua
 Jr.....Junior
 Judg.....Judges
 K.....Potassium [*Kalium*]
 K.....Kings [in Bible]
 K.....king
 Kan.....Kansas
 Kt.....Knight
 Ky.....Kentucky
 L.....Latin
 L.....Lithium
 l. [l. s. d.], } pound, pounds
 or £..... } [sterling]
 La.....Lanthanum
 La.....Louisiana
 Lam.....Lamentations
 Lang.....Languedoc
 lang.....language
 Lap.....Lapland
 lat.....latitude
 lb.; lb. or } pound: pounds
 lbs..... } [weight]
 Let.....Lettish
 Lev.....Leviticus
 LG.....Low German
 L.H.D.....Doctor of Polite Lit-
 erature
 Lieut.....Lientenant
 Lin.....Limousin
 Lin.....Linnæus, Linnæan
 lit.....literal -ly
 lit.....literature
 Lith.....Lithuanian
 lithog.....lithograph. -y
 LL.....Late Latin, Low
 Latin
 LL.D.....Doctor of Laws
 long.....longitude
 Luth.....Lutheran
 M.....Middle
 M.....Monsieur
 m.....mile, miles
 m. or masc.masculine
 M.A.....Master of Arts
 Macc.....Maccabees
 mach.....machinery
 Mag.....Magazine

ABBREVIATIONS.

Maj.....	Major	N. A., or	
Mal.....	Malachi	N. Amer.	North America, -n
Mal.....	Malay, Malayan	nat.....	natural
manuf.....	manufacturing, manufacturers	naut.....	nautical
Mar.....	March	nav.....	navigation, naval af- fairs
masc or m.....	masculine	Nb.....	Niobium
Mass.....	Massachusetts	N. C. or	
math.....	mathematics, math- ematical	N. Car...	North Carolina
Matt.....	Matthew	N. D.....	North Dakota
M.D.....	Doctor of Medicine	Neb.....	Nebraska
MD.....	Middle Dutch	neg.....	negative
Md.....	Maryland	Nen.....	Nehemiah
ME.....	Middle English, or Old English	N. Eng....	New England
Me.....	Maine	neut or n.....	neuter
mech.....	mechanics, mechan- ical	Nev.....	Nevada
med.....	medicine, medical	N.Gr.....	New Greek, Modern Greek
mem.....	member	N. H.....	New Hampshire
mensur...	measurement	NHG.....	New High German [German]
Messrs. or		Ni.....	Nickel
MM.....	Gentlemen, Sirs	N. J.....	New Jersey
metal.....	metallurgy	NL.....	New Latin, Modern Latin
metaph....	metaphysics, meta- physical	N. Mex. ...	New Mexico
meteor....	meteorology	N. T., or	
Meth.....	Methodist	N. Test...	New Testament
Mex.....	Mexican	N. Y.....	New York [State]
Mg.....	Magnesium	nom.....	nominative
M.Gr.....	Middle Greek	Norm. F..	Norman French
MHG.....	Middle High Ger- man	North. E..	Northern English
Mic.....	Micah	Norw....	Norwegian, Norse
Mich.....	Michigan	Nov.....	November
mid.....	middle [voice]	Num.....	Numbers
Milan.....	Milanese	numis.....	numismatics
mid. L. or }	Middle Latin, Me-	O.....	Ohio
ML.....	{ diæval Latin	O.....	Old
milit. or		O.....	Oxygen
mil.....	military [affairs]	Obad....	Obadiah
min.....	minute, minutes	obj.....	objective
mineral....	mineralogy	obs. or †	obsolete
Minn.....	Minnesota	obsoles..	obsolescent
Min. Plen..	Minister Plenipoten- tiary	O.Bulg...	Old Bulgarian or Old Slavic
Miss.....	Mississippi	Oct.....	October
ML. or }	Middle Latin, Me-	Odontog..	odontology
mid. L. ... }	diæval Latin	OE.....	Old English
MLG.....	Middle Low German.	OF or	
Mlle.....	Mademoiselle	O. Fr....	Old French
Mme.....	Madam	OHG....	Old High German
Mn.....	Manzanese	Ont.....	Ontario
Mo.....	Missouri	opt.....	optics, optical
Mo.....	Molybdenum	Or.....	Oregon
mod.....	modern	ord.....	order
Mont.....	Montana	ord.....	ordnance
Mr.....	Master [Mister]	org.....	organic
Mrs.....	Mistress [Missis]	orig.....	original, -ly
MS.; MSS.	manuscript; manu- scripts	ornith....	ornithology
Mt.....	Mount, mountain	Os.....	Osmium
mus.....	music	OS.....	Old Saxon
MUS.DOC....	Doctor of Music	O. T., or	
myth.....	mythology, mytho- logical	O. Test...	Old Testament
N.....	Nitrogen	Oxf.....	Oxford
N. or n.....	North, -ern, -ward	oz.....	ounce, ounces
n.....	noun	P.....	Phosphorus
n or neut...	neuter	p.; pp.....	page; pages
Na.....	Sodium [Natrium]	p. or part..	participle
Nah.....	Nahum	Pa. or Penn.	Pennsylvania
		paint.....	painting
		palæon....	palæontology
		pari.....	parliament
		pass.....	passive

ABBREVIATIONS.

pathol or
 path.....pathology
 PbLead [*Plumbum*]
 PdPalladium
 Penn or Pa. Pennsylvania
 perfperfect
 perhperhaps
 PersPersian, Persic
 persperson
 persp... ..perspective
 pertpertaining [to]
 PetPeter
 Pg. or Port. Portuguese
 pharpharmacy
 PH.DDoctor of Philoso-
 phy
 PhenPhenician
 Phil.....Philippians
 Philem ...Philemon
 philol.philology, philologi-
 cal
 philos. { philosophy, philo-
 or phil .. } sophical
 phonog....photography
 photog ...photography
 phren....phrenology
 phys.....physics, physical
 physiol...physiology, physi-
 ological
 PiedPiedmontese
 Pl.Plate
 pl or plu ..plural
 Pl. D.....Platt Deutsch
 plupf.....pluperfect
 P.M.....afternoon [*post meri-
 diem*]
 pneum ...pneumatics
 P. O.....Post-office
 poet.....poetical
 Pol.....Polish
 pol econ...political economy
 polit.....politics, political
 poppopulation
 Port. or Pg. Portuguese
 posspossessive
 pp.....pages
 pppast participle, per-
 fect participle
 p. prpresent participle
 Pr. or Prov. Provençal
 prefprefix
 prep.... ..preposition
 PresPresident
 prespresent
 Presb.....Presbyterian
 pretpreterit
 prim.....primitive
 priv.... ..privative
 probprobably, probable
 ProfProfessor
 pronpronoun
 pron.....pronunciation, pro-
 nounced
 prop.....properly
 pros.....prosody
 ProtProtestant
 Prov. or Pr. Provençal
 Prov.....Proverbs
 prov.....province, provincial
 Prov. Eng. Provincial English
 PrusPrussia, -n
 PsPsalm, Psalms
 psychol...psychology

pt.....past tense
 ptpint
 Pt.....Platinum
 pub.....published, publisher,
 publication
 pwt.....penny weight
 QQuebec
 qtquart
 qtr.....quarter [weight]
 qu.....query
 q.v.....which see [*quod
 vide*]
 R.....Rhodium
 R.....River
 Rb.....Rubidium
 R. Cath...Roman Catholic
 rec. sec .. recording secretary
 RefReformed
 refl.....reflex
 reg.....regular, -ly
 regt.....regiment
 rel. pro. or
 rel.....relative pronoun
 reprrepresenting
 repub.....republican
 RevRevelation
 RevThe Reverend
 Rev. V....Revised Version
 rhet.....rhetoric, -al
 R. IRhode Island
 R. N.....Royal Navy
 RomRoman, Romans
 Rom.....Romanic or Ro-
 mance
 Rom. Cath. { Roman Catholic
 Ch. or R. }
 C. Ch.... } Church
 r.r.....railroad
 Rt. Rev ...Right Reverend
 RuRuthenium
 Russ.....Russian
 r.w.....railway
 SSaxon
 S.....Sulphur
 ssecond, seconds
 s. [l. s. d.]..shilling, shillings
 S. or sSouth, -ern, -ward
 S. A. or
 S. Amer..South America, -n
 SamSamaritan
 Sam.....Samuel
 Sans, or
 skr.....Sanskrit
 Sb.....Antimony [*Stibium*]
 s.c.....understand, supply,
 namely [*scilicet*]
 S. C. or
 S. Car....South Carolina
 ScandScandinavian
 Scot.....Scotland, Scotch
 scrscruple, scruples
 Scrip.....Scripture [s], Scrip-
 tural
 sculpsculpture
 S. D.....South Dakota
 SeSelenium
 secsecretary
 sec.section
 SemSemitic
 SepSeptember
 Serv.....Servian
 Shaks.... Shakespeare
 SiSilicon

ABBREVIATIONS.

Sic.....	Sicilian	trigon.....	trigonometry
sing.....	singular	Turk.....	Turkish
sis.....	sister	typog.....	typography, typo- graphical
Skr. or		U.....	Uranium
Sans.....	Sanskrit	ult.....	ultimate, -ly
Slav.....	Slavonic. Slavic	Unit.....	Unitarian
Sn	Tin [<i>Stannum</i>]	Univ.....	Universalist
Soc.....	Society	Univ.....	University
Song Sol...	Song of Solomon	U. Presb...	United Presbyterian
Sp.....	Spanish	U. S. ...	United States
sp. gr.....	specific gravity	U. S. A....	United States Army
sq.....	square	U. S. N....	United States Navy
St.....	Senior	Ut.....	Utah
Sr.....	Strontium	V.....	Vanadium
....	Saint	v.....	verb
....	street	Va.....	Virginia
stat.....	statute	var.....	variant [word]
S.T.D.....	Doctor of Sacred Theology	var.....	variety of [species]
subj.....	subjunctive	Ven.....	Venerable
suf.....	suffix	Venet.....	Venetian
Su. Goth...	Suo-Gothic	vet	veterinary
superl ...	superlative	v. i. or	
Supp.....	Supplement	v. intr....	verb intransitive
Supt	Superintendent	vil.....	village
surg.....	surgery, surgical	viz.....	namely, to-wit [<i>vide-</i> <i>licet</i>]
Surv.....	surveying	v. n.....	verb neuter
Sw.....	Swedish	voc.....	vocative
Swab.....	Swabian	vol.....	volume
sym.....	symbol	vols.....	volunteers
syn.....	synonym. -y	Vt.....	Vermont
Syr.....	Syriac, Syrian	v. tr.....	verb transitive
t.....	town	W.....	Tungsten [<i>Wolfram</i>]
Ta... ..	Tantalum	W.....	Welsh
Tart.....	Tartar	W. or w....	West, -ern, -ward
Te.....	Tellurium	Wal.....	Walachian
technol...	technology	Wall.....	Walloon
teleg.....	telegraphy	Wash ...	Washington
Tenn.....	Tenne-see	Westph...	Westphalia, -n
term.....	termination	W. Ind. ...	West Indies, West or W. I... } Indian
terr.....	territory	Wis.....	Wisconsin
Teut.....	Teutonic	wt.....	weight
Tex.....	Texas	W. Va.....	West Virginia
Th.....	Thorium	Wyo.....	Wyoming
theat.....	theatrical	Y.....	Yttrium
theol.....	theology, theological	yd.....	yard
therap.....	therapies	yr.....	year
Thess.....	Thessalonians	Zech.....	Zechariah
Ti.....	Titanium	Zeph.....	Zephaniah
Tim.....	Timothy	Zn.....	Zinc
Tit.....	Titus	zool.....	zoology, zoological
Tl.....	Thallium	Zr.....	Zirconium
toxicol...	toxicology		
tp.....	township		
tr. or trans.	transitive		
transl.....	translation, trans- lated		

See also ABBREVIATIONS: in Vol. 1.

IMPERIAL ENCYCLOPEDIA AND DICTIONARY.

NEW'COMB, SIMON, LL. D. : astronomer; b. Wallace, N. S., 1836, Mar. 12; son of a teacher, and educated at home. He came to the United States 1853; was teacher in Md., 1854-56; became, through Joseph Henry and J. E. Hilgard, 1857, computer on the *Nautical Almanac*, at Cambridge, Mass.; took the course, and three years' graduate study, in Lawrence Scientific School (Harvard) 1857-61; was appointed prof. of mathematics in the U. S. navy 1861, with duty at naval observatory, Washington; had charge of construction and mounting of the 26-inch equatorial telescope; visited the Saskatchewan region 1860, to observe an eclipse of the sun, and Gibraltar 1870-1, for a like purpose; was sec. of the commission to organize expeditions for observing the transit of Venus 1874, Dec. 9; senior prof. of mathematics in the U. S. navy 1877, with rank of capt., and in charge of the office of the *American Ephemeris and Nautical Almanac*; went, 1882, to the Cape of Good Hope to observe the transit of Venus; became, 1884, prof. of mathematics and astronomy at Johns Hopkins Univ., Baltimore; and has assisted in equipping the Lick Observatory, Cal. He was made LL. D. by Columbian Univ., Washington 1874, Yale 1875, Harvard 1884, and Columbia 1887; master of mathematics and doctor of nat. philos. by Leyden, 1875, at the tercentennial; PH. D. by Heidelberg 1886, at the 500th anniversary; was given the gold medal of the Royal Astronomical Soc., London, 1874, and the great gold Huygens medal, for the best work in 20 years by Leyden 1878; and 1887 the Russian govt. ordered his portrait for the Pulkowa gallery of famous astronomers. He was elected royal astronomical associate, London, 1872; corresponding member of the Institute (France) 1874; foreign member of the Royal Soc., London, 1887; and, the same year, one of the council of 8 of the Astronomische Gesellschaft. His works include a great number of papers and memoirs, works for schools covering several branches of mathematics, some popular studies in political economy, and a *Popular Astronomy* (1877), *School Astronomy* (with E. S. Holden, 1879; *Briefer Course* 1883). He has edited the *Amer. Journal of Mathematics*; was pres. of the Amer. Assoc. for the Advancement of Science 1877-8, and vice-pres. of the Nat. Acad. of Sciences from 1883.

NEWCOME—NEWEL.

NEWCOME, *nū'kūm*, WILLIAM, D.D.: 1729, Apr. 10—1810, Jan. 11, b. Abingdon, Berkshire, England. He was educated at Oxford, being a student of Pembroke College, and afterward tutor at Hertford. In 1765 he was made chaplain to the Earl of Hertford, and next year became bp. of Dromore, Ireland; 1775 of Ossor; 1779 of Waterford; and 1785 abp. of Armagh. In all these high offices he had the fullest confidence and respect of all classes. At the same time he was a close Bible student and author of a number of scholarly works, some of the more important being: *Harmony of the Gospels* (1778); *Observations on Our Lord's Conduct as a Divine Instructor* (1782); *New Critical Version of the Twelve Minor Prophets and Ezekiel* (1785-88); *An Historical View of the English Biblical Translations* (1792); *An Attempt toward Revising Our English Translation of the Greek Scriptures* (1796). He died in Dublin.

NEW COM'EDY, THE: see **DRAMA** (Comedy).

NEWDIGATE, *nū'dī-gāt*, Sir ROGER; 1719, May 30—1806, Nov. 25; b. Arbury, Warwickshire, England. He was educated at Oxford, where he won high rank in classical scholarship. He was a member of the house of commons 1751-80, representing the Univ. of Oxford. He was a liberal benefactor of the institution, and, besides other gifts, left funds for the N. prizes annually awarded for the best verses in English on subjects relating to the arts of painting, sculpture, and architecture.

NEWEL, n. *nū'ēl* [Norm. F. *nowel* or *nuel*; F. *noyan*, a stone of fruit, a nucleus, a newel—from mid. L. *nucālē*, belonging to a nut—from L. *nucem*, a nut]. the upright pillar or spindle round which the steps turn in a winding staircase, and by which they are supported from the bottom to the top: in turret-stairs it is a plain roll; but in Elizabethan and old Scotch castles there are frequent examples of newels highly ornamented.

NEWEL, n. *nū'ēl* [from *new*]: in *OE.*, a new thing; a novelty.

NEWELL.

NEWELL, *nū'ēl*, HARRIET (ATWOOD) : 1793, Oct. 10—1812, Nov. 30; b. Haverhill, Mass.; daughter of Moses Atwood. She became interested in Christian missions in early youth, and was one of the first two American women to attempt missionary work in India. Only ten days after her marriage, at about the age of 19, she sailed with her husband, the Rev. Samuel Newell (q.v.), in company with the Rev. Adoniram Judson (q.v.) and his wife, for Calcutta, India, 1812, Feb. 19. The East India Co. not allowing them to remain in Calcutta, they sailed for Mauritius, and thence to the Isle of France. While delayed in the Bay of Bengal by a series of storms, Mrs. N. had a violent attack of fever. A daughter, born a little before the close of the voyage, lived only five days and was buried in the sea. The health of the mother rapidly declined, and she died of consumption soon after reaching the island. Her *Memoirs* were published by her husband; and her *Life*, with many of her letters, and a memorial sermon by Leonard Woods, D.D., passed through a number of editions and was translated into several languages. Her early death under such sad and peculiar circumstances attracted wide attention to the great missionary work then in its incipency in this country, and aroused a strong and permanent interest in it.

NEWELL, ROBERT HENRY (pen-name ORPHEUS C. KERR): born New York, 1836, Dec. 13. He was one of the editors of the *New York Mercury* 1858-62, was connected with the *World* 1869-74, and was editor of *Hearth and Home* 1874-76. During the civil war, he wrote a large number of humorous papers under the name of Orpheus C. Kerr (office-seeker), which gave him wide popularity and which have been republished in 4 vols. Among his works are: *The Palace Beautiful, and Other Poems*; *The Cloven Foot*; *Versatilities*; *The Walking Doll*; and *There Was Once a Man* (1884). He died 1901, July.

NEWELL, SAMUEL: 1785, July 25—1821, Mar. 30; b. Durham, Me. He lost his parents when quite young, went to Boston when 14 years of age, and was assisted by his employer and other friends in obtaining an education. He graduated from Harvard College 1807, and entered Andover Theol. Sem. 1809. He was one of the four students of the latter institution who, 1810, called the attention of the Mass. Assoc. of Congl. Ministers to the foreign missionary field; and thus began the movement that led to the formation of the American Board. With four associates, he was ordained at Salem, Mass., 1812, Feb. 5, for the foreign missionary work. He married Harriet Atwood (q.v.) Feb. 9 of the same year, and Feb. 19 sailed for Calcutta. Missionaries not being allowed to stay at Calcutta, they sailed for the Isle of France. On the voyage, an infant daughter of N. died, and Nov. 30 Mrs. N. died at the Isle of France. N. sailed to Ceylon, and later to Bombay, where, with the Rev. Gordon Hall, he wrote *The Conversion of the World, or the Claims of Six Hundred Millions*. He married Miss Thurston 1818. He died of cholera at Bombay.

NEW ENGLAND—NEW FOREST

NEW ENGLAND, *nū ing'glānd*: collective name popularly given to the six n.e. states—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut—65,000 sq. m. The people have been known colloquially as Yankees, though that term was extended during the late civil war to all residents of the northern states, and is now tending more and more to an indiscriminate application correspondent in extent to the whole United States (see **YANKEE**). The population of N. E., until within the last half of the 19th c., was descended mostly from an English Puritan ancestry, though with some other English, some Huguenot, and some Scotch infusion: they are engaged in commerce, fisheries, and manufactures, and have been noted from early days for industry, enterprise, and general diffusion of education. This region was granted by James I. to the Plymouth Company 1606, under the title North Virginia, and the coast was explored by Captain John Smith 1614. See titles of the several states.

NEW FOREST, *nū fōr'ēst*: district in Hampshire (q.v.) in England; triangular in shape; bounded w. by the river Avon, s. by the coast, and n.e. by a line running from the borders of Wiltshire along the Southampton Water; area about 64,000 acres. This triangle appears to have been a great wooded district from earliest times, and its present name dates from the Norman Conquest, when it was regularly afforested. Since that period it has remained a possession of the crown, subject to rights of 'pannage,' vert (greenwood), and turf-cutting, claimed by various estates in or near the Forest. During the 'pannage' month, which commences at the end of Sep. and lasts six weeks, the borderers drive in herds of swine to feed on the mast in the Forest, and this right they obtain by paying a small annual fee in the stewarts court at Lyndhurst, which is considered the capital of the Forest. Formerly, this district was the haunt of numerous 'squatters,' but their huts are now few. Gypsies, however, still congregate here. In 1854 a commission was appointed to examine the extent and nature of the rights of pannage, etc., claimed by the foresters and borderers, and in a large majority of cases the claims were confirmed. The principal trees in the Forest are the oak and beech, with large patches of holly as underwood. The oaks have been much used as timber for the British navy. A small breed of pony lives wild in the Forest. Tracks of exquisite woodland scenery are frequent. The afforestation of this district by the Conqueror, enforced by savagely severe Forest laws, was regarded as an act of the greatest cruelty, and the violent deaths of both his sons, Richard and William Rufus—both killed by accidental arrow-wounds in the Forest—were deemed special judgments of Providence.

NEWFOUNDLAND.

NEWFOUNDLAND, *nū'fond-land*: large island and British colony of N. America, not yet incorporated with the Dominion of Canada, at the mouth of the Gulf of St. Lawrence, separated from Labrador on the n. by the Strait of Belle Isle (about 12 m. broad), and extending in lat. from $43^{\circ} 38'$ to $51^{\circ} 37'$ n., and in long. from $52^{\circ} 44'$ to $59^{\circ} 30'$ w. In shape it resembles an equilateral triangle, of which Cape Bauld on the n., Cape Race on the s.e., and Cape Ray on the s.w., form the angles. It is 317 m. in greatest length from Cape Ray to Cape Norman; 316 m. in greatest breadth from Cape Spear to Cape Anguille; about 42,000 sq. m. Pop. (1869) 146,536; (1874) 161,486; (1881) 179,509; (1891) 197,934; (1901) 216,615.

The island, as seen from the sea, presents a wild and sterile appearance. Its surface is diversified by mountains, marshes, barrens, ponds, and lakes. The mountains in the Avalon peninsula (stretching s.e. from the main portion of the island, and connected with it by an isthmus only about three m. in width) rise, in some cases, 1,400 ft. above sea-level; while, both here and along the w. shore, the height of 1,000 ft. is frequent. The number of the lakes and 'ponds' (the latter name used indiscriminately for a large or a small lake) is remarkable, and it has been estimated that about one-third of the whole surface is covered with fresh water. The largest lake is Grand Lake, 56 m. long, 192 sq. m.; other large lakes are Red Indian Lake (64 sq. m.), Gander Lake (33 sq. m.), Deer Lake (24 sq. m.). These lakes and their fertile valleys are solitudes, till recently almost unknown to exist. The 'barrens' occupy the tops of hills. The coast-line is everywhere deeply indented with bays and estuaries, many of which are spacious enough to contain the whole British navy. Of these inlets, the principal, beginning from the n. extremity of the island, are Hare, White, Notre Dame, Bonavista, Trinity, Conception, St. Mary's, Placentia, Fortune, St. George's, and St. John's bays. These bays vary in length from 25 to 70 m., are of great breadth, and are lined—as, indeed, the whole coast is—with excellent harbors. The rivers, none navigable for any distance, communicate between the lakes of the interior and the shore, and are narrow and winding. The main streams are the Exploits, with its affluent the Great Rattling, and the Humber: the Exploits is 200 m. long, with a fertile valley suitable for agriculture, draining 3,000 or 4,000 sq. m., and flowing n.e. into Notre Dame Bay. The Humber flows into Deer Lake, and thence w. into the Bay of Islands. Much of the soil is sterile and unproductive, though there is considerable cultivation along the seaboard of the settled districts, limited principally to the s.e. coast. Recent exploration has shown that the best land and the best timber are in the interior. The great body of the people being employed either in the fisheries or in establishments connected with them, little attention used to be given to the culture of the soil; but great improvements in this respect have

NEWFOUNDLAND.

latterly been made. In 1845 the only crops raised were oats and hay; but within recent years large supplies of grain, vegetable, and garden seeds have been imported; and now about 600,000 bushels of potatoes are produced annually, and turnips, hay, carrots, clover, barley, and oats are cultivated with success. It is now evident that N. is capable of sustaining a large agricultural population. The island possesses minerals, among which are marble, limestone, gypsum, roofing-slate, and coal—the last known to exist in several places on the w. side; also copper, nickel, lead, and iron. The copper mines of Notre Dame Bay are famous for richness and success; and though mining is still in its infancy here, mineralogists assert that its evidently metalliferous strata indicate immense mineral wealth. Geologically, the middle, e., and s. portions of N. are of Silurian, Huronian, and Laurentian formations. Trees, of which the chief are pine and fir, birch, and willow, thrive only in the more fertile districts. The climate is very healthful, cooler in summer and less extreme in its winter cold than the mainland nearest. The winter begins with Dec., and ends about the middle of April. Fogs are not frequent, except in the bays and on the shores of the s.e. and s. there are no tornadoes and few thunder-storms.

The fisheries are of two kinds—the 'Shore Fishery' and the 'Bank Fishery': the former comprises the shores and bays of N.; the latter comprises a great tract known as the 'Banks' of N., or the Grand Bank, 500 to 600 m. in length, and about 200 m. in breadth. The Banks form the greatest submarine plateau known; the depth of the water is from 20 to 108 fathoms, and the most productive 'ground' is said to be lat. 42° — 46° n. Great variety of valuable fish is found in the waters around the colony, e.g., cod, salmon, herring, etc. The Gulf stream and the Arctic current meet at the banks, depositing earthy materials and bearing the many species of small sea plants and animals which are the food of mollusks and other invertebrates. These, in turn, supply food for the cod and other fish, on which depends the prosperity of the island. The exports of N. (1894) were valued at \$5,811,169, consisting of: dried cod, \$3,703,358; cod and seal oil, \$539,926; sealskins, \$227,568; preserved lobsters, \$312,364; iron pyrites, copper ore, and regulus, \$513,638. Leading imports were: flour, valued at \$1,351,428; woolens, cotton, and canvas, \$1,112,124; pork, hams, and bacon, \$436,059; butter, \$120,544; molasses, \$323,428; salt, \$112,751; tea, \$147,418; coal, \$205,858; leather and leather ware, \$238,773; beef, \$206,793; sugars, \$87,342; live stock, \$103,508; cordage, fishing-tackle, etc., \$174,759; iron and machinery, \$81,565; hardware and cutlery, \$214,150. Exports were chiefly to Great Britain, \$1,347,425; Canada, \$763,569; British W. Indies, \$242,681; Brazil, \$1,213,570; United States, \$678,437. Imports: from Great Britain, \$2,538,942; Canada and British Colonies, \$2,952,046; United States, \$1,577,060.

NEWFOUNDLAND.

The seal affords one of the most important fishing interests of Newfoundland. This industry may commence any day from Feb. 25 to Mar. 5, according to the winds—a n.e. wind blocking up the coast with ice, which the first strong w. wind clears away. At the beginning of the 19th c., the seal-fishing was carried on with vessels of 30 to 40 tons, manned by 8 or 10 men. Vessels of 70 to 180 tons, manned by 25 to 90 men, were substituted for these, the most suitable being vessels of 120 to 140 tons. About 1866, steamers were introduced into the seal-fishing, and they have proved very serviceable. Total value of exports of sealskins (1894) was \$227,568; seal-oil also was a valuable article of export.

In proportion to the population of N., its religious institutions are ample, while education is within reach of all classes. About two-fifths of the pop. are adherents of the Chh. of Rome; nearly two-fifths of the Chh. of England; nearly one-fifth are Wesleyans; and Presbyterians, Congregationalists, Baptists, etc., make up the small remainder.

The railway was commenced in 1881, and has been extended from St. John's, across the island to Port aux Basques, in the s. w. part of the island. There are few roads across the island; they are confined chiefly to the s.e. and s.w. seaboard. Indeed, the interior is mostly uninhabited. There is weekly communication for nine months in the year between N. and Europe. In the colony and connected with it 400 m. of lines of telegraph have been constructed, and the Atlantic telegraph has its w. terminus in the harbor of Heart's Content.

The early history of N. is involved in obscurity. The island was discovered 1497, June 24, in the reign of Henry VII., by John Cabot; and the event is noticed by the following entry in the accounts of the privy-purse expenditure: '1497, Aug. 10. To hym that found the New Isle, £10.' It was visited by the Portuguese navigator, Gaspar de Cortereal, 1500; and within two years after that time, regular fisheries had been established on its shores by the Portuguese, Biscayans, and French. In 1578, 400 vessels, of which 50 were English, were engaged in the fishery. Sir Humphrey Gilbert, with his ill-fated expedition, arrived in St. John's harbor 1583. Aug., and formally took possession of the island in the name of Queen Elizabeth. In the return voyage, the expedition was scattered by a storm, and the commander lost. In 1621, Sir George Calvert (afterward Lord Baltimore) settled in the great peninsula in the s.e., and named it the *Province of Avalon*. The history of the island during the 17th and part of the 18th c. is little more than a record of rivalries and feuds between the English and French fishermen; but by the treaty of Utrecht (1713), the island was ceded wholly to England—the French, however, retaining the privilege of fishing and drying their fish on certain portions of the coast. France retains also—sole remnant of her former vast possessions

NEWFOUNDLAND DOG.

in N. Amer.—the small islands of Miquelon and St. Pierre, about 90 sq. m. off the s. coast. A gov. of N. was appointed 1728. The present form of govt., established 1855, consists of the gov., a legislative council (appointed by the crown), and a general assembly (elected by the people every four years, on house-tenancy suffrage). The coast of Labrador on the mainland, and the island of Anticosti, have been included, since 1809, within the jurisdiction of the gov. of Newfoundland. In 1887 the legislature sent to the imperial govt. a grievance relating to the fisheries and the encroachment upon them by French subjects. A bill dealing with the matter was introduced in parliament, but was disallowed by the house of commons. Diplomatic action followed; but the relations between Great Britain and France prevented results satisfactory to the colony. An act forbidding sale of bait to French fishermen, who, being bounty-aided, were able to undersell the colonists in foreign markets, was the principal subject of contention. The bill was adopted, vetoed by the imperial authorities, and finally allowed on earnest petition of the colony. Within two years the fish product of N. increased 20 per. cent. through the operations of this bait law. In 1889 the British and French govts. entered into a temporary *modus vivendi*, to which the colony of N. was greatly opposed; and a delegation was sent (1891) to the British house of lords to protest against legislation for its enforcement. Eventually the colonists agreed to recognize the *modus vivendi*. In 1890, the N. legislative council and house of assembly sent another appeal to the imperial govt., couched in the strongest language; a French naval officer created a little excitement in St. George's Bay; and at the time of writing (Oct.) the colonists were maintaining a determined attitude, and rumor credited the British and French govts. with an intention of sending war-vessels to the N. coast.

In 1892 a fire in St. John damaged that city to the amount of more than \$15,000,000; the devastated portion has since been rebuilt.

NEWFOUNDLAND DOG: one of the most sagacious and esteemed of the large kinds of dog; said to have been originally derived from Newfoundland, where it is used chiefly as a beast of draught, to draw light loads of wood or provisions, on sledges, over rugged tracks. Multitudes of these dogs, in St. John's and elsewhere, are left to shift for themselves during the fishing season; and are again called to service when required by their masters. There are several varieties of N. D., particularly a smooth breed, with rather small head, white and spotted with black, which seems now extinct; a very large breed, with broad muzzle, head raised, noble expression, waved or curly hair, very thick and bushy curled tail, black and white color; and a smaller, almost black, breed. Some of the breeds seem crossed with hounds and other dogs. The N. D. is remarkable for memory, and for patience and forbearance. It is, however, apt to become irascible

NEWGATE—NEW GUINEA.

In confinement, and will then bite even its master. Some of the most interesting anecdotes of the affection and sagacity of the dog relate to the N. D. No dog excels it as a water-dog. Its paws are half-webbed. Its power of endurance in swimming is very great.

NEWGATE, *nū'gāt*: famous London prison at the w. extremity of Newgate street, opposite the Old Bailey. The exterior presented high, dark stone walls, without windows. It was long the chief criminal prison of city and county; but when no longer used for prisoners tried at the central court, it fell in the hands of the court of aldermen. The earliest prison here was in the portal of the *new gate* of the city, as early as 1218; hence the name. About two centuries afterward it was rebuilt by the executors of Sir Richard Whittington, whose statue with a cat stood in a niche, till its destruction by the great fire of London, 1666. Shortly after it was reconstructed; from which time, till 1780, the date of the erection of the present edifice, its condition was, in a sanitary view, horrible. Mr. Akerman, one of the keepers, in his evidence before the house of commons, 1770, stated, as a proof of this, that in the spring of 1750 the jail distemper, spreading to the adjoining Sessions House, caused the death of 'two of the judges, the lord mayor, and several of the jury and others, to the number of 60 persons and upwards.' After the reconstruction it was kept in the cleanest possible condition. The cells for condemned prisoners were at the n.e. corner, next to Newgate street. The *Newgate Calendar* contains biographical notices of the most notorious murderers, burglars, thieves, and forgers who have been confined within its walls. The prison was torn down in 1902.

NEW GRANADA, *nū grā-nā'dā*: name under which the n.w. part of S. America was ruled by Spain, through a president, or later a viceroy, from the middle of the 16th to early in the 19th c. It embraced the immense region which is now Colombia, Venezuela, and Ecuador. The earliest rule was that of two Spanish adventurers, over two territories. These were united 1514, and later made a presidency of New Granada. This was put under a viceroy 1718, for a year, and again permanently 1740. Revolt against Spanish rule began 1811, and lasted to 1824. Bolivar formed in 1819 the Republic of Colombia of the whole region, but from this Venezuela withdrew 1829, and Ecuador 1830, and the remaining part became, 1831, the Republic of New Granada, which became, 1861, the United States of Colombia. See COLOMBIA, UNITED STATES OF.

NEW GUINEA, *nū ghīn'ē*: largest island in the world (excluding Australia). See PAPA.

NEW HAMPSHIRE.

NEW HAMPSHIRE, *nū hămp'shēr*: state; one of the United States; 9th of the original 13 to ratify the U. S. constitution; one of the six New England states; now (1900) 36th in pop.

Location and Area.—N. H. is in lat. $42^{\circ} 40'$ — $45^{\circ} 18' 23''$ n., long. $70^{\circ} 37'$ — $72^{\circ} 37'$ w.; bounded e. by Me. and the Atlantic, s. by Mass., w. by Vt., with the Connecticut river as its w. edge, and at the extreme n.w. and on the n. by Canada. Its full length n. and s. is 180 m., its width 90 m. at the s. end (or 100, embracing the 4 islands, of the 9 Isles of Shoals, which are part of N. H.), narrowing to 20 m. at the n. end; area by the state geologist's estimate (1880) 9,336 sq. m.; average elevation 1,200 ft.

Topography.—N. H. touches the Atlantic by a coast of 18 m. only, between the s. end of the coast of Me. midway of the mouth of the Piscataqua, and the n. end of the coast of Mass. at a point $2\frac{1}{2}$ m. n. of the mouth of the Merrimac river. From this last point the boundary runs parallel to the Merrimac, $2\frac{1}{2}$ m. from it, until it cuts the line of $42^{\circ} 40'$ n. lat., when it follows that line w. to the Connecticut river, and thence n. up that river to the mouth of Hall's stream, on the w. of the upper Connecticut, and up Hall's stream to the watershed ridge separating the head-waters of the Connecticut from the sources of streams that flow to the St. Lawrence, and follows the eastward curve and irregular course of this ridge across to the e. border of the state. This border ascends from the mouth of the Piscataqua to the confluence with it of the Salmon Falls river, then follows that river w. of n. to its source, and thence takes the direction of a straight line toward Quebec, bearing a very little w. of n. Parallel to the long valley of the Connecticut river is a notable mountain ridge which comes up through Conn. and Mass., and enters the s. end of N. H., running n. and a little e. of n., with an average height of 1,500 ft. for 80 m., then for 40 m. reaching, in the main line of the White Mountains, an average of 4,000 ft., after which the ridge goes to the n. limit of the state, with an average height of 2,000 ft. The peaks of the southern 80 m. of the ridge are: Monadnock 3,186 ft., Sunapee 2,683, Smart's 2,500, Cuba 2,927, and Piermont 2,500. In the central section of the ridge, the peaks are: Moosilauke 4,811 ft., Blue 4,370, Kinsman 4,200, Lafayette 5,259, Haystack 4,500, Twins 4,920, Field 4,070, Webster 4,000, Jackson 4,100, Clinton 4,320, Pleasant 4,764, Franklin 4,904, Monroe 5,384, Washington 6,293, Clay 5,553, Jefferson 5,714, Adams 5,794, Madison 5,365. The gaps in this part of the ridge are: the Woodstock notch 1,655 ft. above sea-level, Franconia notch 2,014, Pinkham notch 2,018, White Mountain notch 1,914, Dixville notch 1,831. The peaks of the last section to the n. are: Randolph 3,043 ft., one in Erving's Location 3,156, Pisgah 2,897, Carmel 3,711, and the highest peak of the boundary ridge on the n. 2,917. The lowest gaps found anywhere along the whole line of the ridge are: at the Orange summit of the Northern railroad 990 ft., at the

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Warren summit of the Boston Concord and Montreal railroad 1,063 ft., at the Milan summit of the Grand Trunk railroad 1,087 ft., at the Newbury summit of the Concord and Claremont railroad 1,161 ft., and at the summits in Harrisville and Stoddard. E. of the lower and southern section of the great ridge, and s. of the White Mountains, there are a few peaks, as: Kearsarge 2,943 ft., Gunstock 2,394, Crotched 2,066, Great Moose 1,404, and Cropple Crown 2,100; but otherwise this part of the state is not over 600 ft. above sea-level, and its 18 m. of sea-coast show for the most part only salt marshes and a sandy beach. The chief streams of the N. H. side of the Connecticut river-basin, flowing from the backbone ridge into that river, are: the Ashuelot in the s.w., the Sugar and the Mascoma higher up, the Lower Ammonoosuc from the White Mountains, and the Upper Ammonoosuc beyond the mountains (a separate stream). The drainage of the middle of the state, from the White Mountains s., is by the Pemigewasset river from the heart of the mountains, into which Baker's river falls on the w., at Plymouth, and which becomes the Merrimac at Franklin, where the Winnipiseogee river brings into it the waters of Lake Winnipiseogee. The Merrimac flows s. into Mass., past Concord, Manchester, and Nashua, in N. H., with five important tributaries on the w. and two on the east. On the e. side of the s. end of the state, the Piscataqua has a short course from the union, forming it, of the Salmon Falls and Coheco rivers. The tide enters through it to an inland tidal basin of about 9 sq. m., from which the ebb is so strong as to keep open a very deep channel, never known to freeze over, on which Portsmouth, 3 m. from the sea, is built, with a harbor equal to receiving 2,000 ships, and water deep enough for the largest class at low tide. Passing n., the e. boundary crosses several streams flowing from the N. H. mountains into Me.—the Ossipee, the Saco, the Androscoggin, and higher up Lake Umbagog, a feeder of this river, and the upper course of the river, where it enters from Me., for a long circuit through the e. edge of N. H. The head-waters of the Saco, in the White Mountains, cut their way through a remarkable chasm 2 m. long and but 22 ft. wide in the narrowest place. The streams of N. H. number nearly 1,500, and with the large and small lakes cover about one-sixteenth of the state. Lake Winnipiseogee has an area of 72 sq. m., contains 267 islands, and shows a great variety of beautiful bays and shores. Other lakes are Sunapee, Mascoma, New Found, Squam, Ossipee, Umbagog, and four in the extreme n. which are the head-waters of the Connecticut river, besides very many smaller ones in all parts of the state. The broad hills, bold mountains, and beautiful lakes of N. H. are an attraction hardly second to any in the U. S., and convenient of access from New York and Boston, while the volume of the streams, with notable falls in the larger ones, gives water-power for manufacturing scarcely excelled anywhere.

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Climate.—The air of N. H. is pure and healthful. The winters are severe, and on the hills especially the cold is excessive; while snow covers the ground, often to a great depth, and all the rivers and lakes are ice-bound. The valleys suffer least from the cold, that of the Merrimac being the warmest part of the state. The heat of summer reaches to from 90° to 100° on a few days, but is much broken by cool winds and chilly rains. The rainfall in the mountains has been found 55 inches for a year, to 46 inches for the greatest elsewhere in the state (at New Found Lake), 35 inches near the sea-coast, and 40 inches in the extreme n.

Geology.—The various groups of rocks, nearly all crystalline, fall under the three varieties of eozoic: (1) Laurentian, (2) Montalban, (3) Huronian, with some indeterminate groups and a paleozoic series—all together aggregating a thickness of 75,000 ft. The rocks everywhere show indications of the action of ice, in scarification of their exposed surfaces, the transport of bowlders, formation of terraces along the rivers when the water stood 200 ft. higher than now, and moraines left by local glaciers. The minerals which have been mined to some extent are gold, silver, copper, iron, zinc, lead, arsenic, tin, bismuth, manganese, and molybdenum, but nothing extensive has been done with any metallic ores. The granite of the state is peculiarly valuable. It is very fine-grained, of light-gray color, and is much used for monuments and in building. There are 40 extensive quarries in the state. Soapstone or steatite is largely obtained, in slabs, for stoves, fireplaces, sinks, set tubs, rollers, etc. Slate, limestone, clays for brick, quartz and felspar, mica and tourmalines, plumbago or graphite, colored porphyries, and beryls of rare size and value are among the minerals. The soil of N. H. is good in the valleys, and good enough on many of the lower hills to be made productive by skilled industry. The n. part is chiefly pasture and woodland, with very small areas of tillage. Originally dense forest clothed nearly all the land, and trees still cover, though of later growth, about one-quarter of the state. Four areas of growth and of animals are noted: (1) that of the s. end, where the hickory, chestnut, mountain laurel, wild grape, and cranberry occur, with such animals as the blue-jay, bobolink, red-headed woodpecker, Baltimore oriole, humming-bird, the box and painted turtles, and the rattlesnake; (2) that of heights above 600 and below 4,000 ft., and extending to the n. limit of the state, the trees and animals being Canadian, as spruce, balsam fir, canoe birch, and bush maple, with the Canada lynx, caribou, snowbird, cross-bill, spruce partridge, Canada jay, and rose-breasted grosbeak; (3) that of the sides of the White Mountains, above the 4,000 and up to the 5,000 ft. limit, in which the dwarfed spruces of the Hudson's Bay region are found, and both a butterfly and a grasshopper peculiar to that region are plentifully distributed; and (4) that of the mountain-tops above 5,000 ft., where a Labrador butter-

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fly is abundant, and 53 species of plants, of subalpine and alpine character, which are either of Labrador or Hudson's Bay region in their relations, left here in the tops of the mountains when the arctic climate of a remote ice age retreated to the present arctic limits. Through N. H. generally the trees of most value are the pines—white, red, and pitch, which grew in the original forests from 200 to 270 ft. high, spruces, hemlock, larch, beech, birch, red and sugar maples, chestnut, red and white oaks, elm, hickory, poplar, and cherry. Game, wild fowl, and fish are abundant throughout the state. Attention to fish culture since 1865 has developed remarkable results, many streams and lakes having been well stocked with fine varieties. More than a hundred streams were stocked 1872–80 with black bass, brook-trout were widely distributed, and both Atlantic and land-locked salmon were planted in the Pemigewasset river. At Plymouth and at Sunapee Lake, fish-hatching houses have been very successful, producing and distributing very great numbers of valuable varieties of fish—salmon, trout, whitefish, shad, etc. In 1876 were planted 1,725,000 young fish of these varieties, and from that date the stocking of lakes and streams has gone on with most satisfactory results. The Plymouth station alone sent out 1885 nearly 3,000,000 young fish. At Lake Sunapee six species of *salmonidæ* are abundant: (1) native brook-trout, (2) land-locked salmon, (3) rainbow-trout from the Sierra Nevada, (4) blue-backed trout of Maine, (5) Loch Leven trout from Scotland; (6) a white trout known only since 1881.

Agriculture.—N. H. was a chiefly agricultural state, into which an immense development of manufactures has been introduced by capital attracted by its wealth of water-power. In 1870 the number of farms, averaging 122 acres each, was 29,642; and the whole value of farm-lands (2,334,437 acres of improved, and 1,271,507 of unimproved, including 1,017,000 of woodland), implements, and live-stock was \$99,295,801, and that of all products of every kind \$25,315,102. The number of farms in 1880 was 32,101; acreage of improved land 2,308,112, of unimproved 1,336,636; value of lands, implements, and live-stock \$38,715,697, and of all products of every kind \$16,609,476—a falling off from 1870 of \$8,705,626. The chief items of farm products in 1880 were these: potatoes 3,358,828 bush., Indian corn 1,350,248 oats 1,017 6.0, wheat 169,316, barley 77,877, buckwheat 94,090, hay 583,069 tons, butter 7,247,272 lbs., wool 1,060,589, cheese 807,076, maple-sugar 2,731,945, tobacco 170,843, hops 23 955, honey 87,886, milk sold 5,739,128 gals., maple-molasses 79,712. In 1890 the number of horses was 52,458, oxen 23 648, milk-cows 109,423, other cattle 89,817, sheep 131 611, swine 58,535. On April 6, 1896, the number of sheep was 84,149, wool-clip, washed and unwashed, 589 043 lbs., scoured wool 247,398 lbs. In 1900 N. H. had 29,324 farms of 3,609,863 total acreage, an average of 123 acres per farm; of this 1,076,879 was improved; farm value, land, fences, and

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buildings, \$70,124.360, implements and machinery \$5,163.090, live stock on hand June 1 \$10,554.646. In 1896 N. H. had 28,761 acres in corn, producing 670.131 bu., worth \$489,196; buckwheat 25,215 acres, 766.536 bu., \$398,599 value; oats 11,934 acres, 417,690 bu., \$183,784 value; hay 625.851 acres, 663.402 tons, \$8,989,097 value; potatoes 18 650 acres, 2,238,000 bu., \$1,544,220 value. A state board of agriculture, established 1870, has greatly contributed to intelligence and economy in farming; but changes in recent years have lessened tillage and increased dairying, have turned some farmers into summer boarding-house keepers, and have caused many farms to be deserted. In 1859 a legislative inquiry showed that in 160 of the 235 towns of the state there were 927 deserted farms with buildings in fair condition.

Manufactures.—N. H. had (1890) 3,229 manufacturing establishments, with 63,361 employees, receiving \$24,248,054 wages, requiring \$79,375,160 capital, using \$47,754,152 materials, and yielding \$85,770,549 products. Chief industries according to the value of the products were: cotton goods, establishments 27, capital \$26,801,933, employees 19,533, wages \$6,429,084, materials \$12,962,939, products \$21,958,082 (against \$13,226,513 in 1880); boots and shoes, establishments 64, capital \$3,956,774, employees 8,064, wages \$3,469,948, materials \$6,749,322, products \$11,986,003 (\$7,230,804 in 1880); woolen goods, establishments 46, capital \$7,540,233, employees 4,189, wages \$1,643,168, materials \$4,834,446, products \$8,004,264 (\$4,113,839 in 1880); worsted goods, establishments 4, capital \$4,295,688, employees 1,963, wages \$678,552, materials \$2,080,295, products \$2,764,976 (\$2,694,232 in 1880); lumber and saw mill products, establishments 531, capital \$6,222,380, employees 4,651, wages \$1,459,929, materials \$2,471,838, products \$5,017,062 (\$3,842,012 in 1880); lumber, planing-mill products, establishments 32, capital \$493,598, employees 709, wages \$347,477, materials \$511,051, products \$986,893 (\$606,548 in 1880); hosiery and knit goods, establishments 37, capital \$2,706,067, employees 3,178, wages \$989,130, materials \$1,777,595, products \$3,481,922 (\$2,362,779 in 1880); foundry and machine-shop products, establishments 76, capital \$3,658,689, employees 2,174, wages \$1,115,065, materials \$1,296,963, products \$2,895,716 (\$2,024,656 in 1880); flouring and grist mill products, establishments 121, capital \$904,075, employees 265, wages \$123,790, materials \$2,061,208, products \$2,358,616 (\$2,512,784 in 1880); leather tanned and curried, establishments 18, capital \$1,303,992, employees 709, wages \$337,556, materials \$2,303,363, products \$2,988,209 (\$4,477,350 in 1880); furniture, including cabinet-making and upholstering, establishments 52, capital \$754,259, employees 791, wages \$389,307, materials \$541,001, products \$1,224,297 (\$760,713 in 1880); paper, establishments 12, capital \$1,134,091, employees 502, wages \$233,276, materials \$695,041, products \$1,224,022 (\$1,731,170 in 1880); printing and publishing, establishments 118, capital \$877,575, employees 748, wages \$363,078, materials \$229,605, prod-

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uct \$919,528 (\$264,750 in 1880); clothing, men's, establishments 95, capital \$577,485, employees 1,391, wages \$441,867, materials \$737,114, products \$1,363,405 (\$731,389 in 1880); timber products not manufactured at mills, establishments 39, capital \$1,349,787, employees 1,075, wages \$284,917, materials \$135,635, products \$624,383; gloves and mittens, establishments 10, capital \$392,743, employees 407, wages \$131,134, materials \$246,713, products \$480,315 (\$178,825 in 1880); wooden packing-boxes, establishments 29, capital \$331,075, employees 370, wages \$156,950, materials \$321,111, products \$567,846 (\$219,700 in 1880). In 1900 there were reported 4,671 manufacturing establishments, employing \$101,000,000 in capital and 70,000 persons, paying \$27,620,247 for wages, and \$66,348,594 for materials used, and yielding products valued at \$118,000,000. The other leading industries were the following: iron and steel, carriages and wagons, malt liquors, woodenware, wood-pulp, belting and hose, blacksmithing, wood turned and carved, cutlery and edge-tools, carpentering, tin, copper, and sheet-iron ware, stationery, and saddlery and harness.

Commerce.—N. H. has one port of entry, at Portsmouth, but with very light imports and exports, nearly all foreign trade being done through Boston. It is associated with Me. and Vt. for internal-revenue collection, and the part for N. H. alone for the fiscal year 1901-2 was \$710,482.80.

Railroads.—The mileage of railroads has been as follows: (1840) 53 m.; (1850) 467; (1860) 661; (1870) 736; (1880) 1,015; (1885-6) 1,044.17; (1887) 1,072.92; (1888) 1,079.49; (1890) 1,142; (1892) 1,161; (1893) 1,156; (1894) 1,170; (1895) 1,179; total investment (1895) \$26,076,564, of which \$16,300,050 was capital stock and \$7,839,500 funded debt; gross earnings \$2,730,231. In 1901 there were 1,192 miles of railroads within the State, of which 19 miles was completed during the previous year; net earnings \$748,477. In 1887-8 a severe contest, on the part of the Boston and Maine, for possession by lease of the Concord, the Boston Concord and Montreal, and other northern roads, resulted (1889) in a law uniting the two northern roads, and authorizing the new corporation to purchase 12 of the lesser northern roads; also authorizing the Boston and Maine to purchase the Eastern and ten other roads, and permitting these two great interests to make traffic contracts for a term of years, but neither to lease the other.

Religion.—The religious organizations of N. H. 1888-9 were: Congl., 189 churches, 182 ministers, 19,508 members; Meth. Episc., 130 ministers, 14,482 church members; Bapt., 82 churches, 76 ministers, 8,627 members; Free-Will Bapt., 101 churches, 107 ministers, 8,207 members; Prot. Episc., 25 parishes, 8 missions, 34 clergy, 2,729 communicants; Rom. Cath., 50 churches, 12 chapels, 42 parish schools with 7,000 pupils, 59 priests, and about 73,000 members; Seventh-Day Adventists, 24 churches in the New England district, with 7 ministers and 766 members; Universalists, 38 parishes, 28 church edifices, 2,011 families; Unitarian, 24 churches; Friends, 13 societies and 7,305 members; Presb., 5 churches and 579 members.

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Education.—N. H. had (1893-4) 86,700 children of school age (5-18 years), of whom 62,437 were enrolled during the school year, average attendance 42,030, or 67·3 per cent. of the number enrolled; average number of days' school 124·75, aggregate days' school given 5,243,243, or 87·6 per enrolled pupil; teachers 3,187 (200 males, 2,907 females), schoolhouses 1,998, valued at \$3,086,824, total expenditures \$920,803; pupils in private schools 4,211, total enrolment, public and private, 69,129. A new school law of 1885 has promoted arranging for schools by towns instead of school districts, effecting an increase in the number of graded schools, better teaching, and more weeks of schooling (23 weeks instead of 20 each year, as the average of all schools). In 1886 there had been 494 small schools discontinued, and 679 fewer teachers required than by the old plan, while new graded schools were formed by town union of old district schools. The districts were reduced from 1,890, under the old law, to only 270, under the new, in 1887; 21 more small schools were discontinued (1888), and 2 new high, and 16 new graded, schools added. Besides the high and graded schools under state control, N. H. had (1895) 25 academies, seminaries, and private schools with 135 instructors, 1,964 secondary students (1,208 males, 756 females), and 382 elementary pupils. Phillips Exeter Acad., at Exeter, and St. Paul's School, for boys, at Concord, are noted fitting schools for college and university; Phillips Acad. is more than a century old. A state normal school opened at Plymouth 1871, and for which new buildings were voted 1889, at a cost of \$60,000. The two colleges founded in N. H. are Dartmouth Coll. (non-sect.), at Hanover, 1769, and which has grown toward university character by the addition of a scientific school, a school of civil engineering, a medical school, and a college of agriculture and the mechanic arts, and St. Anselm's College (R. C.), at Manchester, 1893. N. H. has funds for support of schools, as a literary fund raised by a tax of one-half of one per cent. on the capital of savings banks, and particular town or district funds; but it has no general state revenue for this purpose. The towns are required to tax themselves, and they may go beyond the amount required by law. Education was made compulsory by an act of 1871, June. The general charge of school matters is intrusted to a supt. of public instruction, and local charge to town school committees, or to prudential committees in districts, bodies to which women may be elected since 1872. A system of free text-books for the public schools was adopted 1889, the cost to be borne by each city and town.

N. H. has 95 newspapers, of which 15 are daily, 1 tri-weekly, 67 weekly, 1 semi-monthly, 10 monthly, and 1 quarterly. One of these, the *Mirror and Farmer*, Manchester, has a circulation over 25,000; five exceed 5,000—two weeklies in Concord, and a daily and two weeklies in Manchester. The average circulation of each issue of all the 126 is 1,351.

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The state industrial school for the correction of wayward youth was opened at Manchester 1855 to receive boys and girls under 17 years of age committed for offenses against the law. It had (1894) 116 boys and 17 girls. The state pays \$6,000 a year toward its receipts. The expenditures (1894) were \$15,000, of which \$3,000 was for buildings and grounds. The N. H. orphans' home school of industry at Franklin, opened 1871, is supported by contributions. The state has supported and educated its indigent deaf, dumb, and blind, idiotic and feeble minded, in special institutions in Mass. and Conn. The insane are cared for in great part (about 1,000) by the several cos., now having improved facilities, and otherwise in the state insane asylum, established 1838, which had 336 inmates, yearly expenditure \$97,402; receipts \$98,284 (of which \$6,000 came from the state). A state soldiers' home was established 1889, with an appropriation of \$30,000 and the gift of a site of 40 acres in Tilton. The state prison had 110 inmates 1889, May; its expenses for 1888-9 were \$19,090, and earnings \$15,148. There has been a gradual decrease in the number of convicts since 1878, when the average was over 200.

Illiteracy.—Total population (1890) 10 years of age and over 315,497, illiterates 21,476, or 6·8 per cent.; males, total 155,928, illiterates 11,643, or 7·5 per cent.; females, total 159,569, illiterates 9,833, or 6·2 per cent.; total white population 10 years of age and over 314,913, illiterates 21,340, or 6·8 per cent.; native whites, total 247,824, illiterates 3,679, or 1·5 per cent.; foreign whites, total 67,089, illiterates 17,661, or 26·3 per cent.; total colored population 10 years of age and over 584, illiterates 136, or 23·3 per cent.

Banks and Banking.—In 1890 the true value of all property in N. H. was \$325,128,740, of which \$176,131,000 was real estate, \$14,044,975 farm stock and machinery, \$1,188,089 mines and quarries, \$6,059,688 gold and silver coin and bullion, \$30,964,366 mill machinery, \$58,782,551 railroads and equipments, and \$2,143,867 telegraphs, telephones, shipping, and canals. The assessed value of real estate was \$141,729,716, or 80·91 per cent. of the true value, assessed value of personal property \$121,330,082, *ad valorem* tax \$4,063,640, or \$10·79 per capita and \$1·54 per \$100 of assessed valuation. Of this tax \$618,701 was for the state, \$484,709 for the county, and \$2,359,242 municipal. The total debt less sinking fund was \$8,148,362, of which \$2,691,019 was state, \$556,987 county, \$4,718,025 municipal, and \$182,331 school district; annual interest charge \$414,122, or \$5·34 per \$100 and \$1·10 per capita. The total expenditures were \$3,582,704, of which \$445,366 were on the state, \$576,887 on the county, \$1,387,057 in municipalities having 4,000 or more population, and \$814,394 for schools. On 1902, June 1, the total funded debt was \$845,300; trust funds \$823,771; total debt \$1,669,071. The net debt was \$756,432·36; assets \$912,638. The assessed valuation (1896) was \$259,116,800, (1893) \$274,816,342, (1902) \$286,487,655. There were (1902, Oct. 31) 58 nat. banks having \$5,737,500 in cap., \$7,209,176 surplus and \$4,513,508 in outstanding circulation; \$13,410,219 out in loans and discounts;

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444 depositors, or \$389.15 for each depositor. A new law, 1883-4, reduced the number of bank commissioners to two, and put them into the pay of the state, with reference to more effective care of the interests of depositors. The number of national banks organized previous to 1889, Oct. 31, was 56 (5 in liquidation and 51 in operation), cap. stock paid \$6 325,260, circulation outstanding \$3,942,995, shares held in the state 57,332, held elsewhere 5,968. N. H. has one state bank, with cap. \$50,000.

History.—Capt. John Smith visited the Piscataqua river and the coast in the vicinity 1614. In 1622 a grant of the terr. back from the coast 60 m., and between the Kennebeck and Merrimac rivers, was made to Sir Ferdinando Gorges (q.v.) and Capt. John Mason (q.v.), to be the province of Maine, and the first settlement w. of the Piscataqua was made in the spring of 1623. Gorges and Mason later divided their province, Mason taking from the Piscataqua to the Merrimac, and calling it New Hampshire. A grant confirmed his rights 1629, and he sent over colonists supplied with mills, houses, and cattle, for a strong plantation. Rye, Portsmouth, and Dover were settled (the first as Little Harbor, and the second as Strawberry Bank). The death of Mason, 1635, enfeebled the colony; and as its members were Episc. of the Church of England, the Puritans of Massachusetts Bay were not slow to press upon them, and so far got control as to bring N. H. under Massachusetts 1641, the plea being that nearly all of N. H. belonged to Massachusetts by her charter. The colony was thus lost to Mason's estate; but 40 years later his heirs in England secured the overthrow of the intruding interest and the setting up of a royal province. An order of the king's govt. 1677 limited Massachusetts to within 3 m. n. of the Merrimac, and 1679 a royal commission set up a govt. of N. H., the king appointing its pres. and council, and the people electing an assembly. A new govt. was set up 1692, which lasted until 1774. The exposed situation of N. H. caused repeated and terrible suffering from hostile Indians for 75 years (1675-1750). The bounds of the province on the s. and e. were fixed by royal authority 1740, and on the w. 1764, until which date the terr. beyond the Connecticut river, now Vermont, was a part of N. H. It was disputed between New York and N. H. to which the transferred region belonged, until, 1790, the matter was settled by making it the state of Vermont. Although N. H. had been settled by royalists and churchmen, and had escaped from Massachusetts control, its part in the revolution was early and active. Her patriots captured the fort at New Castle 1774, Dec., gave a vigorous support to the war, adopted a state constitution 1784, June 2, ratified the U. S. constitution 1788, and framed a new state constitution 1791, Sep. 7—1792, Sep.—N. H. had 12,497 soldiers in the revolution, more than 2,000 in the war of 1812, and in the civil war 32,750, or about one in ten of the population.

Government.—The state administration consists of a

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gov. elected by the people, or, in case of failure to elect, chosen by the legislature from the two candidates having the most votes; a state or gov.'s council of five, and three railroad commissioners; a sec. of state, treas., commissary-gen., and state printer, elected by the legislature in joint convention; and an atty.gen., adjt.gen., insurance commissioner, two bank commissioners, supt. of public instruction, boards of health, of agriculture, and of tax equalization, a state librarian, and an editor and compiler of state papers, appointed by the gov. and council. The new constitution, which came into force, as to elections, 1878, Oct. 1 (as to other matters 1879, June), made elections biennial, on the Tuesday after the first Monday in Nov., and the terms of service of the elected state officers and the legislature two years; the sessions of the legislature to be held biennially in the odd years, to open the first Wednesday in June. By an amendment adopted by popular vote 1889, Mar. 12, the terms of legislative and executive officers begin from Jan. instead of June, and the legislature meets the first Wednesday in Jan. instead of the first Wednesday in June. By the new constitution, the senate has 24 members elected from 24 districts, into which the state is divided; and the basis on which the house is chosen gives (1888) 313 members. A property qualification for representatives, required by the constitution of 1792, was removed by an amendment which the people adopted 1851. All judicial officers, judges, county solicitors, sheriffs, coroners, and registers of probate are appointed by the gov. and council; but county commissioners and treasurers, and registers of deeds, are elected by the people. A new judiciary system, which came into effect 1874, Aug., provided for a superior court, composed of a chief-justice and two associate justices, and a circuit court, also composed of a chief-justice and two associates. Below these are probate and police courts, and justices of the peace. Two trial terms, at least, of the circuit court, are held annually in each co., and two annual law terms of the superior court, at Concord, beginning on the first Tuesdays in June and December. In 1901 there were 568 post-offices of all grades.

The governors have been the following: Josiah Bartlett 1792-94; John Taylor Gilman 1794-1805; John Langdon 1805-09; Jeremiah Smith 1809-10; John Langdon 1810-12; William Plumer 1812-3; John Taylor Gilman 1813-16; William Plumer 1816-19; Samuel Bell 1819-23; Levi Woodbury 1823-4; David L. Morrill 1824-27; Benjamin Pierce 1827-29; John Bell 1829-30; Matthew Harvey 1830-1; Jos. M. Harper (acting) 1831; Samuel Dinsmoor 1831-34; William Badger 1834-36; Isaac Hill 1836-39; John Page 1839-42; Henry Hubbard 1842-44; John H. Steele 1844-46; Anthony Colby 1846-7; Jared W. Williams 1847-49; Samuel Dinsmoor 1849-52; Noah Martin 1852-54; Nathaniel B. Baker 1854-5; Ralph Metcalf 1855-57; William Haile 1857-59; Ichabod Goodwin 1859-61; Nathaniel S. Berry 1861-63; Joseph A. Gilmore 1863-65;

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Frederic Smyth 1865-67; Walter Harriman 1867-69; Onslow Stearns 1869-71; James A. Weston 1871-2; Ezekiel Straw 1872-74; James A. Weston 1874-5; Person C. Cheney 1875-77; Benj. F. Prescott 1877-79; Natt Head 1879-81; Charles H. Bell 1881-83; Samuel W. Hale 1883-85; Moody Currier 1885-87; Charles H. Sawyer 1887-89; David H. Goodell 1889-91; Hiram A. Tuttle 1891-93; John B. Smith 1893-95; Charles A. Busiel 1895-97; George A. Ramsdell 1897-99; Frank W. Rollins, 1899-1901; Chester B. Jordan 1901-03; Nathum J. Bacheller, 1903-05.

Counties, Cities, and Towns.—N. H. is divided into 10 counties. In 1890 the most populous *counties* were: Hillsborough 93,247; Rockingham 49,650; Merrimack 49,435; Strafford 38,442; Grafton 37,217; Cheshire 29,579; Coos 23,211; and Belknap 20,321; *cities and towns*: Manchester 44,126; Nashua 19,311; Concord 17,004; Dover 12,790; Portsmouth 9,827; Keene, 7,446; Rochester 7,396.

Politics.—State, congressional, and presidential elections are held on the Tuesday after the first Monday in Nov. The state govt. (1903) was republican, with a maj. of 18 in the senate, 115 in the house, 133 on joint ballot. N. H. had three members of the lower house of congress under the apportionment previous to the 10th census, and has had two since 1882, with two U. S. senators, thus giving her four electoral votes. For the presidential vote, see PRESIDENT and VICE-PRESIDENT, ELECTION OF.

Population —(1790) whites 141,097, colored (free) 788, total 141,885 (10th in rank among 13 states); (1800) whites 213,490, colored 970, total 214,460 (11th in rank among 16 states); (1830) whites 268,721, colored 607, total 269,328 (18th in rank among 24 states); (1840) whites 284,036, colored 538, total 284,574 (22d in rank among 26 states); (1850) whites 317,456, colored 520, total 317,976 (22d in rank among 30 states); (1860) whites 325,579, colored 494, total 326,073 (27th in rank among 33 states); (1870) whites 317,679, colored 580, total 318,300 (31st in rank among 37 states); (1880) whites 346,229, colored 685, total 346,991 (31st in rank among 38 states); (1890) 376,530 (33d in rank among 44 states); (1900) 411,588.

NEW HARMONY, *nūhâr'mo-nī*: a town in Indiana, settled 1815 by a German community of religious socialists, called Harmonists, under leadership of George Rapp. In 1824, the town and domain were purchased by Robert Owen, for an experimental community on his system. After the speedy failure of this society, the property was bought by William Maclure, for a school of industry. Pop. (1900) 1,341.

NEW HAVEN.

NEW HAVEN: town, city, port of entry, and cap. of New Haven co., Conn.; at the head of N. H. Bay, four m. from Long Island Sound, 73 m. e.n.e. of New York, 33 m. s. of Hartford; lat. $41^{\circ} 18' 23''$ n., long. $72^{\circ} 56' 30''$ w; on the New York N. H. and Hartford Railroad, *via* Springfield to Boston, and the point of junction with this of the New York and New England, and the shore lines between New York and Boston; also a terminus of the N. H. and Northampton and the N. H. and Derby railroads; and with two steamboat lines, giving three boats daily to and from New York. The site of N. H., area of 10 sq. m., is an alluvial plain of sand or rich loam, limited on the n. by an abrupt range of trapdikes, the two highest joints of which, known as East Rock and West Rock, mark the n.e. and n.w. corners of the plain, while at the middle on the n. a considerable tongue of wooded higher ground penetrates from the n. to near the centre of the city, and gives the elegant residence quarter of Whitney and Hillhouse avenues, and the old Tutors' lane, now beautifully improved. In remote geological times the Connecticut river entered Long Island Sound where N. H. now is, until the upheaval of the present range of trapdikes turned it off through the narrows at Middletown and by way of Saybrook to the Sound. The city proper is built on the area between West and Mill rivers; and on that e. of Mill river to the Quinnipiac river Fair Haven is built. The sand and stratified gravel laid down by the mouth of the ancient river give now a very dry foundation for streets and buildings, and abundance of pure water at a moderate depth. Sheltered by its semicircle of hills to the n., and open to a great inland sea, within reach also of the influences of the Gulf Stream, N. H. has pure air, a mild climate, and conditions of health which have given it the lowest death-rate of any seaport of its size in the world. Its streets are beautifully planted with elms, in large part the work, early in the present century, of James Hillhouse, who sat in the U. S. senate 1796-1815, and was long one of the most notable men in New England. Ample room over a fair plain, all equally good to build on, has had the effect of preventing the crowding of residences thickly together, nearly all the better class having yard and lawn room, with gardens and shrubbery. The original settlers laid out a half-mile square of land into nine squares for building, reserving a central square of 16 acres for public uses, including sites for three of the churches and for a state house. This Green, with elms of a size and form rarely seen, is now the centre of the city, and one of the finest public squares in any city. There are a dozen other parks, half of them quite small; but Jocelyn has $2\frac{1}{2}$ acres; Clinton, $3\frac{1}{2}$; Wooster, $4\frac{1}{2}$; the original grounds of Yale University, next w. of the Green, 9; Hamilton, $47\frac{1}{2}$; and the magnificent new East Rock park, 353 acres, 362 ft. above tide-water, with a \$50,000 soldiers' monument, commemorating a century of American valor, 1775-1865.

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on the brow of the cliff, which gives one of the sightliest spots anywhere dedicated to this purpose.

The town and the city are two separate organizations, though now occupying practically the same limits, since the final extension of those of the city. The govt. of the town has continued from the earliest days to the present time by selectmen, not more than seven, who are annually elected, and with them grand jurors, constables, assessors, a town clerk, a board of relief, a register of births, a treasurer, a collector of taxes, etc. The city has a charter under which it is governed for municipal purposes, in 12 wards, by boards composed of two aldermen and three councilmen from each ward, elected for two years. A mayor, chosen for two years, is the municipal head, with the nomination in his hands of the principal administrative boards. The city dates from 1784, Jan. 21, 146 years after the first settlement, 1638, of the town. It was the first city in the United States to be incorporated after England had recognized American independence. The original settlement of the town was made by an English Puritan colony sent from London under Theophilus Eaton and the Rev. John Davenport, the commercial aims of which led to the choice of the site, 30 m. w. of the mouth of the Connecticut river, at the head of a fine harbor. The early name was Quinipiack, and the first Sabbath was kept by Divine service under a great oak, 1638, Apr. 15. The name N. H. was decided on, 1640, Sep. 1. A state (colonial) was organized, and by 1843, Oct., the settlements of Stamford, Greenwich, Guilford, and Wilford, near by, and Southold on the e. end of Long Island, had joined it, laying a foundation which in due course should have become the commonwealth of New Haven. A similar state organization had grown out of settlements a little earlier, 1635-6, along the Connecticut river, with the name Connecticut, promising a state of Connecticut, next e. of the state of New Haven with Rhode Island beyond, and Plymouth beyond Rhode Island, a chain of four small states lying s. of Mass. But just as the original New England state organization erected by the colony of Plymouth was suppressed by union of the territory with Mass., 1692, so was New Haven as an infant state suppressed by a royal charter extending Connecticut, 1662, May 10, which was submitted to 1665, Jan., after fruitless remonstrance. 1665-1701, the general court of Connecticut thus constituted, held its sessions at Hartford, and then for 117 years, 1701-1818, held its Oct. sessions at N. H., and its May sessions at Hartford. On a new constitution taking effect, 1819, the legislature met in the even years at Hartford, and in the odd at N. H., until 1874. Hartford finally became the sole capital.

The early building of N. H. was on lots convenient to the water, and the houses were 'fairer and more commodious than those of other colonies' (says Hutchinson). Vessels also were built, and trading posts attempted, and down to the ruinous war of 1812 shipping was a very

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Great interest, though disastrously checked by one revolution. That it has never ceased to be important is shown by the fact that among our seaports N. H. is seventh in order for the amount of duties on imports paid into the U. S. treasury. The U. S. govt. is deepening the harbor to 20 ft. at mean low water (more than 26 ft. at high water), and is constructing two long breakwaters at the mouth of the harbor, securing one of the finest harbors of refuge on the coast. It is claimed that at no point in New England can coal and materials for manufactures be delivered at rates lower than at New Haven.

No great industrial centre of the United States has a more remarkable variety of manufactures. The making of carriages employs 2,000 workmen and 39 factories, with an output of \$2,000,000 annually. One of the largest hardware concerns in America employs here more than 1,800 men; and a score of smaller factories add 1,200 to the roll of workmen engaged in this trade. The Winchester Repeating Arms Co.—organized 1858, incorporated 1866, its present building, covering two squares, erected 1870—employs 1,500 men in skilled labor, operating 3,000 different machines. In the making of corsets a single factory employs more than 1,500 persons. The machine, iron, and steel work interest of N. H., embracing steam engines and boilers, and a long list of products, is immense and steadily growing. Other chief interests are brass goods, rubber goods, clocks, harness and saddlery, locks, pianos, lumber products, and oyster farming. According to the U. S. census of 1900 there were 1,236 manufactories, employing a capital of \$30,463,066, annually paying out \$10,016,571 to wage-earners, and yielding products of the value of \$40,762,015. The financial interest of this vast and complex industry engages 7 national banks, with capital, \$2,764,800; surplus, \$1,453,000; 4 savings banks with local deposits, \$11,526,954; and three private banking houses. The exchanges of the local banks, 1888, amounted to \$60,782,206, and the returns of the N. H. clearing-house for one month reached \$4,500,000. The extent to which N. H. is surrounded by thriving and wealthy towns and villages, and thickly settled agricultural country, adds greatly to its business. It is notable for the extent of its wholesale trade.

The debt of N. H. is slight; its property valuation, \$50,340,850, and real value close upon \$100,000,000. The streets of N. H. have an extent of 130 m., with over 20 m. of pavement, 15 m. of street railroads, and more than 100 m. of water-pipes, complete gas or electric lighting, and since 1871 a very effective sewerage system with over 35 m. of sewers. The water supply, since 1862, Jan., has been from Mill river, with a watershed of 56 sq. m. and daily supply of 120,000,000 gals. to which has been added the lakes of Maltby Park, w. of the city, and the waters of Saltonstall Lake, giving of pure and soft water enough for a city of 300,000 inhabitants.

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The first church of N. H. dates from 1639. There are now (1890) 66 churches, of which the Congl. are 18; Meth. Episc. 13; Prot. Episc. 11; Bapt. 7; Lutheran 2; Presb. 1; Univ. 2; Rom. Cath. 8; Jewish 3; and Second Advent 1. There are 26 Masonic lodges, 28 Odd Fellow, and 37 other secret organizations; a general hospital with 1,500 beds, and the N. H. hospital; the N. H. and the St. Francis orphan asylums; a free public library with a new building (cost \$100,000.); and active grand army posts, temperance secret societies, various charitable homes, a dispensary, several mutual aid organizations, and 114 charitable societies.

There are 37 school-houses, 30 owned by the city, with room for 15,000 pupils, and schools of the best character, richly provided in every way, and free to all. There are a large number of private schools, a collegiate institute, seminaries for girls, and the Hopkins Grammar School; while above all these stands Yale University (q. v.), started 1701, Nov., in a minister's study at Killingworth (now Clinton), 20 m. e. of N. H.; removed to N. H. 1716-7: now occupying more than 30 university buildings, bearing on its roll of graduates (1890, June) nearly 15,000 names, and with a broadly developed and substantial strength in all its various faculties and schools.

Of the 182 newspapers and periodicals of the state, N. H. has 32; 6 daily, 2 Sunday, 1 semi-weekly, 10 weekly, 2 bi-weekly, 10 monthly, and 1 bi-monthly. The national buildings at N. H. are the custom-house and post-office. The city hall, built 1861, is one of the finest in New England; the county court-house cost (1873) \$134,000. Pop. (1775) 1,800; (1800) 4,049; (1810) 5,772; (1820) 7,147; (1830) 10,180; (1840) 12,923; (1850) 20,345; (1860) 39,267; (1870) 50,840; (1880) 62,882; (1890) 81,298; (1900) 108,027.

NEW HEBRIDES—NEW IRELAND.

NEW HEBRIDES, *nā hēb'ri-dēz*: group or long chain of volcanic islands in the Pacific Ocean, about 200 m. n.e. of New Caledonia, and w. of the Fijis, in s. lat. 14° — 20° , and in e. long. 167° — 170° ; total area estimated 3,500 sq. m. They are regarded as the most easterly point of the w. division of Polynesia, and are part of the long chain of groups in the w. Pacific known as Melanesia. The N. H. group comprises Espiritu Santo (65 m. long by 20 broad), Mallicollo (60 m. long by 28 broad), Vati Ambrym, An-natom, Erromango, and Tanna, with an active volcano. Aurora, one of the most fertile of the group, disappeared 1871, leaving no trace. Most of the group are hilly and well wooded, some even mountainous. The soil is very fertile; but the climate is deemed unhealthy for strangers. The most important woods are ebony and sandal; principal edible products, yams, bananas, cucumbers, cocoa-nuts, and sweet potatoes; and the only animal of consequence, a diminutive species of hog, which, full-grown, is no bigger than a rabbit. The inhabitants are fierce, excessively dirty and unintelligent; and are said to have been mostly cannibals; but Christian missionaries have wrought a great change in them. Erromango is a well-known name in missionary history, being the scene of the barbarous massacre of the Rev. John Williams—generally called the Martyr of Erromango. Pop. about 70,000.

NEW HOLLAND: former name for Australia (q.v.).

NEW INN HALL, OXFORD: hall, with certain gardens adjoining, presented to the warden and fellows of New College, Oxford Univ., by William of Wykeham 1392. The first principal on record appears 1438. During the civil war it was used as a mint for Charles I. It was restored to the purposes of instruction by Dr. Cramer, late principal, who erected a handsome building for the use of the students.

NEW IRELAND: long, narrow island in the Pacific Ocean, about 20 m. n.e. of New Britain (q.v.), from which it is separated by St. George's Channel: lat. $2^{\circ} 40'$ — $4^{\circ} 52'$ s., long. $150^{\circ} 3'$ — $152^{\circ} 50'$ e.; length about 240 m.; average breadth, 12 m. The hills rise 1,500 to 2,000 ft., and are richly wooded. The principal trees are cocoas on the coast, and forests of areca-palm in the interior. The chief products are sugar-cane, bananas, yams, cocoa-nuts. Dogs, pigs, and turtles abound. Except a Polynesian colony on the s. coast, the natives apparently resemble the Solomon Islanders; they are cannibals like the inhabitants of New Britain (q.v.), to whom they are inferior in some respects; but our information about them is extremely scanty. Politically, N. I., with the island of New Britain, is now a part of Kaiser Wilhelm's Land.

NEW JERSEY.

NEW JERSEY, *nū jer'zī*: state; one of the 13 original states in the American Union; ranking (1900) 1st in fertilizing marl, zinc, and silk goods; 4th in iron ore; 14th in potatoes; 18th in hay; 9th in manufactures. 8th in buckwheat; 9th in rye; 16th in population; 6th in pig iron; 29th in corn.

Location and Area.—N. J. is in lat. $38^{\circ} 55'$ — $41^{\circ} 21'$ n., long. $73^{\circ} 53'$ — $75^{\circ} 33'$ w.; bounded n. by N. Y., e. by the Hudson river, Staten Island Sound, Raritan Bay, and the Atlantic Ocean, s. by Delaware Bay, w. by Penn., Del., and Delaware river and bay; n. boundary, from the w. bank of the Hudson, in lat. 40° n., to a point on the n. bank of the Navesink, at its junction with the Delaware at Port Jervis; e. boundary, between it and N. Y., through the Kills, Hudson river, and New York Bay (as determined by an interstate commission 1889), a line extending through the middle of the channel in New York Bay, and e. of Ellis and Liberty islands and the Robin's Reef lighthouse (N. Y. losing and N. J. gaining these islands); extreme length $167\frac{3}{8}$ m.; extreme breadth 59 m., least 32 m.; 7,315 sq. m. (5,001,600 acres); cap. Trenton.

Topography.—The surface of N. J. is very diversified. In the n. half it is traversed by three distinct mountain ranges; in the s. half there are no notable elevations, the centre being an undulating plain sloping e. to the ocean and w. to Delaware river and bay, from a median tract 150 to 190 ft. above the sea. Two of the mountain ranges—the Kittatinny, or Blue, and the Highland—belong to the Appalachian chain, and the third and lowest range, between the Highlands and the ocean, is a part of the system that extends from Mass., through N. Y., and enters N. J. below the Palisades. The highest of the ranges is the Kittatinny, an almost unbroken ridge from the N. Y. state-line to the Delaware Water Gap, which is 1,479 ft. above sea-level at the Gap and 1,800 at High Point, near the N. Y. line. The Highland range is of directly opposite formation, being a series of broken or detached ridges, nearly all of which have distinct names, such as Green Pond, Hamburg, Wawayanda, Schooley's, and Musconetcong mountains. Its highest point is Rutherford's Hill, on Hamburg Mountain, 1,488 ft. The famous Palisade Mountain, or Palisades, a picturesque trap-ridge, begins in Rockland co., N. Y., about 8 m. w. of the Hudson river, takes a bold curve to the river, and then follows it down to Hoboken. W. of it 10 to 18 m., and nearly parallel with it, are ridges known as First, Second, and Third mountains, which include several popular sections, as the Orange Mountain, Fairmount, etc. Further w. and s., and connected with the general trap-range, are Rocky Hill, Ten-Mile-Run Mountain, Long Hill, Sourland Mountain, Goat Hill, Round Mountain, and the horseshoe-shaped Pickle Mountain. The most elevated part of the s. half of the state is the Navesink Highlands (q.v.), s. of Sandy Hook. The Delaware river drains the w. half of the state, has 15 tributaries, and empties into Delaware Bay; the Passaic and Hackensack—both navigable—unite, and

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empty into Newark Bay; the Raritan, with two branches and three tributaries, empties into Raritan Bay; and the Rahway, Navesink, Shrewsbury, Shark, Manasquan, Metedeconk, Tom's, Mullica's, and Great Egg Harbor rivers empty into the ocean. The bays are: Delaware, Newark, Raritan, Sandy Hook, Barnegat, Little and Great Egg Harbors, Great, and Absecon; and the lakes: Budd's, Culver's, Green, Greenwood (q.v.), Hopatcong, Morris, Long Sucker, Swartout's, and Wawayanda. Almost the entire sea-coast from Sandy Hook to Cape May has been made available for summer and autumn residence and transient recreation, the largest of the resorts being Long Branch, Asbury Park, Ocean Grove, Long Beach, Atlantic City, and Cape May city. Greenwood and Hopatcong lakes are popular interior resorts, and the Wawayanda region has recently grown into large importance.

Climate.—The climate varies greatly in different parts of the state, but is generally healthful. The most noticeable changes are along the sea-coast, where ocean breezes, land winds, and depressing humidity alternate. The annual mean temperature of the n. half is 48° to 50° ; of the s. half 53° to 55° ; at Newark 51.25° , New Brunswick 51.1° , Sandy Hook 49.9° ; annual rainfall in state about 44 in., at Newark 54.73 inches. The temperature is so delightful at Atlantic City that it is frequented in winter almost as largely as in summer, though there is a fall of about 33° .

Geology.—The geological history of N. J. is more than ordinarily interesting from the fact that all the great periods, excepting the carboniferous and Jurassic, are represented in the state. The present minute knowledge of this branch of the state's history is due almost exclusively to the labors of George H. Cook, LL.D. (1818, Jan. 5—1889, Sep. 22), state geologist, whose *Geology of New Jersey* (1868) was accompanied by 8 large maps, warmly praised by the most famous geologists of the world. The oldest rock formation is the azoic or archaic of the Highlands, a belt 23 m. wide on the N. Y. and N. J. boundary, and 9 m. wide on the Delaware river, with outcroppings near Trenton and at Jersey City, all stratified, and with syenitic gneiss predominating. This formation contains also limestone, slate, and granite, and magnetic iron ore. The portion of the belt in Sussex, Passaic, Morris, and Warren cos. contains several mines, whose product is partially worked in the state, but chiefly in the Penn. anthracite region. The Silurian and Devonian epochs are found n.w. of the azoic rock, and show magnesian limestone—used for building purposes and making lime—and hematite ore, with conglomerate, sandstone, and Potsdam sandstone in the lower Silurian system. The triassic period appears s.e. of the Highlands, underlying Bergen, Passaic, Essex, Union, Somerset, Hunterdon, Middlesex, and Mercer cos., and attaining a width of 30 m. on the Delaware river. This formation holds trap-rock, sandstone for building, fossil fish, and

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copper ores and native copper. In the cretaceous representatives, s.e. of the triassic, is the plastic clay series, which yields excellent fire, porcelain, and potter's clay, and specimens of fossil wood and leaf-prints. The next two formations are the clay marl and greensand marl, of which there are three distinct beds, extending from Sandy Hook to Salem, about 90 m. long and 12 to 25 ft. thick, the beds being separated by belts of sand. The marl contains sea-shells, pieces of coral, sharks' teeth, saurian bones, etc., and is exceedingly valuable for fertilizing. In the s.e. are evidences of the tertiary age, with miocene calcareous marl in Cumberland co. Glass-makers' sand is found in large quantities at Millville. Winslow, Jackson, and elsewhere in the s., from which one-third of the product of green glass in the United States is made. The drift period is widely represented, isolated patches of alluvial beds are found, peat-bogs are frequent, and the coast-line is a constantly shifting sand-dune. The economic properties, besides those mentioned, are roofing and writing slates, flag and paving stones, zinc ores that supply more than one-fifth of the metallic zinc produced in the United States, galena lead ore, nickel, kaolin, infusorial earth, graphite or plumbago, sulphate of baryta, manganese, and iron pyrites. To these should be added the white cedar logs from the remarkable cedar 'mine,' or sunken forest, in Cape May co. This mine has supplied choice wood and excellent shingles for more than a century, and geologists claim that the trees have been covered with swamp and subsequent growths for more than 1,000 years. The forest area comprises about one-third the state, and contains pine, cedar, oak, hickory, chestnut, basswood, dogwood, ash, and elm. Wild grapes, apples, peaches, plums, cherries, and water-melons and musk-melons are very prolific; and more than one-half the cranberries produced in the United States are grown in N. J.

Zoology.—There are numerous black bears, raccoons, opossums, squirrels, ground-hogs, rabbits, musk-rats, red and gray foxes, minks, otters, and skunks; black whales and porpoises; turtles, terrapins, tortoises, and lizards. Of the serpent tribe there are rattle, copper-head, milk-adder, black, and water snakes; of birds there are turkey-buzzards, black vultures, eagles, falcons, hawks, owls, and fish-hawks; ruffed grouse, quail, heron, plover, snipe, woodcock, rail, wild geese, duck, brant, teal, and ibis; humming-birds, whip-poor-wills, swallows, robins, wax-wings, turtle-doves, and wild pigeons; and of fish a great variety, including perch, sunfish, black-fish, sheep's-head, porgy, weakfish, common and Spanish mackerel, bluefish, cod, flounder, halibut, salmon, brook-trout, smelt, shad, herring, moss-bunker, sea-horse, sturgeon, shark, and devil-fish. Several varieties of oysters and clams are largely cultivated.

Agriculture.—In 1890 N. J. had 30,828 farms of 2 662,009 acres, an average of 86 acres per farm; of this 662,892 acres or 75.1 per cent. was improved. Of

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these farms 11,681 were under 50 acres, 8,837 from 50 to 100 acres, 10,183 from 100 to 500 acres, 93 from 500 to 1,000 acres, and 34 over 1,000 acres; 22,442 were cultivated by the owners, and 8,386 rented. The land, fences, and buildings were valued at \$159,262,840, implements and machinery \$7,378,644; live stock on hand June 1, value \$15,811,430; total products for the year \$28,997,349. Of the live stock there were 86,925 horses, 8,227 mules and asses, 1,825 oxen, 161,576 milch-cows, 48,661 other cattle, 224,388 swine, and 55,409 sheep; the cattle produced 64,003,953 gallons of milk, 8,367,218 lbs. of butter, 23,613 lbs. of cheese. Other farm products were: Indian corn 8,637,011 bu.; oats 2,837,293 bu.; wheat 1,823,382 bu.; barley 1,043 bu.; buckwheat 114,626 bu.; rye 874,049 bu.; hay 661,791 tons; tobacco 33,855 lbs.; Irish potatoes 4,055,851 bu.; sweet potatoes 2,254,344 bu.; apples 603,890 bu.; peaches 776,078 bu.; pears 80,664 bu.; cherries 6,762 bu. In 1895 N. J. had 279,788 acres in corn, producing 9,233,004 bu., valued at \$3,877,862; wheat 108,139 acres, 1,340,924 bu., value \$952,058; oats 107,561 acres, 3,813,416 bu., value \$1,107,341. In 1900 N. J. had 34,650 farms comprising 2,840,966 acres, of which 1,977,042 acres were improved and 863,924 unimproved, and all farm property valued at \$189,533,660.

Manufactures.—In 1890 N. J. had 9,225 manufacturing establishments, with a capital of \$250,805,745, employing 187,398 hands, paying \$96,778,736 in wages, using \$189,365,740 of materials, and producing \$354,573,571 of product. On the basis of the value of the product the leading industries were: silk and silk goods, establishments 132, capital \$16,809,927, employees 17,917, wages \$7,176,180, materials \$17,908,883, products \$30,760,371 (\$17,122,230 in 1880); foundry and machine-shop products, establishments 249, capital \$19,084,636, employees 13,432, wages \$7,957,672, materials \$9,967,500, products \$21,666,955 (\$11,282,748 in 1880); petroleum refining, establishments 4, capital \$16,500,730, employees 2,703, wages \$1,618,501, materials \$16,474,022, products \$20,711,826; slaughtering and meat-packing (wholesale), establishments 67, capital \$1,989,086, employees 840, wages \$673,784, materials \$16,370,632, products \$18,061,968 (\$20,719,640 in 1880); malt liquors, establishments 34, capital \$10,184,540, employees 1,395, wages \$1,408,932, materials \$3,592,491, products \$10,018,393 (\$4,532,733 in 1880); hats and caps, establishments 87, capital \$2,655,707, employees 6,688, wages \$3,568,242, materials \$3,605,074, products \$8,533,729 (\$6,152,147 in 1880); chemicals, establishments 44, capital \$7,131,419, employees 1,884, wages \$1,184,809, materials \$5,026,040, products \$8,146,795 (\$4,993,965 in 1880); iron and steel, establishments 22, capital \$9,050,046, employees 4,056, wages \$2,162,304, materials \$5,076,104, products \$8,139,321 (\$10,341,896 in 1880); boots and shoes, factory product, establishments 109, capital \$2,811,098, employees 5,455, wages \$2,488,858, materials \$3,417,180, products \$7,255,409 (\$4,089,286 in 1880); dyeing and finishing textiles, establishments 41, capital \$5,197,403, employees

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8,864, wages \$2,057,562, materials \$2,711,121, products \$6,183,397 (\$3,365,769 in 1880); flour and grist mill products, establishments 228, capital \$2,816,221, employees 707, wages \$336,076, materials \$8,026,694, products \$5,928,352 (\$8,459,944 in 1880); men's clothing, establishments 413, capital \$3,712,938, employees 4,394, wages \$1,977,363, materials \$2,246,772, products \$5,762,016 (\$4,737,525 in 1880); cotton goods, establishments 17, capital \$13,519,972, employees 5,683, wages \$2,054,282, materials \$3,028,933, products \$5,902,615 (\$5,039,519 in 1880); woolen goods, establishments 21, capital \$5,810,832, employees 4,228, wages \$1,481,315, materials \$3,281,979, products \$5,652,166 (\$4,984,007 in 1880); leather, patent and enamelled, establishments 22, capital \$3,524,526, employees 1,739, wages \$1,166,224, materials \$3,186,636, products \$5,430,161; glass, establishments 34, capital \$3,744,894, employees 5,840, wages \$2,862,719, materials \$1,310,953, products \$5,218,152 (\$2,810,170 in 1880); clay and pottery products, establishments 60, capital \$5,478,332, employees 4,628, wages \$2,596,699, materials \$1,366,834, products \$5,165,537 (\$2,598,757 in 1880); lumber and planing mill products, establishments 101, capital \$2,761,927, employees 1,827, wages \$1,180,312, materials \$2,996,817, products \$4,869,372 (\$1,404,400 in 1880); jewelry, establishments 74, capital \$3,303,615, employees 2,006, wages \$1,417,428, materials \$2,357,326, products \$4,724,500 (\$4,079,677 in 1880), fertilizers, establishments 27, capital \$3,705,914, employees 1,088, wages \$591,208, materials \$2,882,809, products \$1,319,088. In 1900 there were 15,481 manufacturing establishments, employing \$502,824,082 in capital and 241,582 persons, paying \$110,088,605 for wages, \$360,945,843 for materials used, yielding \$611,748,933.

Commerce.—In 1896 N. J. had 1,144 recorded vessels of 103,200 tons, of which 2 vessels, 220 tons, were registered, 482 vessels, 94,318 tons, enrolled, and 660 vessels, 8,661 tons, licensed; 934 vessels, of 66,625 tons, were sailing; 123, of 14,846 tons, steam; 2, of 250 tons, canal; and 85, of 21,479 tons, barges. The customs stations were: Bridgeton, Trenton, Somers Point, Tuckerton, Newark, Jersey City, Perth Amboy, and Camden. Jersey City belongs to the New York district, and Camden to the Philadelphia district. For the year ended 1902, Dec. 31, the imports at Bridgeton were \$53,000; Newark, imports \$368,639, exports, \$991,865; Great Egg Harbor, imports, \$15,967; Perth Amboy, imports \$345,661, exports \$371,629. During the year there were built 18 sailing vessels, 444 tons; 5 steam, 197 tons; 5 barges, 1,933 tons; total 28 vessels, 2,574 tons. The internal-revenue collections for the year were \$4,111,713, (1895) \$4,088,667, (1893) \$4,457,609, (1890) \$4,206,723, (1886) \$3,951,676, (1902) \$8,035,946. N. J. produced (1902) 17,896 gals. of distilled spirits and 2,463,405 barrels of fermented liquors.

Railroads and Canals.—In 1895 there were 2,216.65 miles of railroad capitalized at \$323,706,280; gross earnings \$39,148,543, of which \$12,903,796 was from passenger traffic and \$23,432,074 from freight; net earnings \$11,661,949, interest

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paid on bonds \$9,287,425; dividends on stocks \$5,418,329. The principal railroads were the Pennsylvania; the Delaware Lackawanna and Western; the New York Lake Erie and Western; the New York Susquehanna and Western; the New York Ontario and Western; the Philadelphia and Reading; the Central of N. J.; the Northern of N. J.; the West Shore; the N. J. Southern; the N. J. Midland; the Lehigh Valley. In 1901 there were 2,242 miles of railroads in operation. The principal canals were the Morris, extending from Jersey City to Phillipsburg, 103 m., 33 locks, cost \$6,000,000, now leased by the Lehigh Valley railroad company and used for shipping coal, lime, lumber, etc., belonging to the company; and the Delaware and Raritan, from New Brunswick to Trenton, 66 m., 14 locks, cost \$4,888,749.

Religion.—In 1885 the Meth. Episc. Church led the denominations, with 492 churches, 338 ministers, 74,926 members, and was followed in their order by the Presb. 268 churches, 365 ministers, 46,070 members; Bapt. 172 churches, 32,367 members; Rom. Cath. 142 churches, 184 priests, 175,000 adherent population; Ref. 114 churches, 18,683 members; Prot. Episc. 136 churches, 14,926 members; Luth. 74 churches, 8,360 members; and 20 minor denominations with 100 to 3,400 members each. In 1889 the Meth. Episc. Church reported 2 conferences, with 4 districts each—N. J. conference: 298 churches, 213 local and 200 travelling preachers, 46,424 members, 341 Sunday-schools, 6,345 officers and teachers, 44,838 scholars, church property valued at \$2,411,500; Newark conference: 270 churches, 143 local and 206 travelling preachers, 41,450 members, 314 Sunday-schools, 5,602 officers and teachers, 42,604 scholars, church property valued at \$3,187,350—total 568 churches, 356 local and 406 travelling preachers, 87,874 members, 655 Sunday-schools, 11,947 officers and teachers, 87,442 scholars, church property valued at \$5,598,850. The Bapt. reported 6 associations, 209 churches, 211 ministers, 38,189 members, 265 Sunday-schools, 4,519 officers and teachers, 33,402 scholars, and church property valued at \$2,746,521. The Ref. (Dutch) reported 8 classes and part of another (Philadelphia), 118 churches, 145 ministers, 12,059 families, 22,283 members, 159 Sunday-schools, and 25,762 teachers and scholars. The Prot. Episc. reported 2 dioceses—N. J. (organized 1785): 1 bp., 123 churches, missions, and chapels, 76 parishes, 105 clergy, 11,840 members, 1,294 Sunday-school teachers, 11,116 scholars; Newark (organized 1874): 1 bp., 77 parishes and missions, 34 clergy, 14,549 members, 1,222 Sunday-school teachers, 11,214 scholars—total 2 bps., 153 parishes, 139 clergy, 26,389 members, 22,330 Sunday-school pupils. The Rom. Cath. reported 2 dioceses—Newark (erected 1853): 1 bp., 109 churches, 12 chapels and stations, 191 priests, 1 seminary, 3 colleges, 18 academies, 75 parochial schools, 24,731 scholars, 16 charitable institutions, Rom. Cath. pop. 168,000; Trenton (established 1881): 1 bp., 87 churches, 40 chapels and stations, 88 priests, 1 seminary, 1 college, 7 acade-

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mis, 25 parochial schools, 6,100 scholars, 2 charitable institutions, Rom. Cath. pop. 100,000—total 2 bps., 196 churches, 52 chapels and stations, 279 priests, 2 seminaries, 4 colleges, 25 academies, 100 parochial schools, 30,831 scholars, 18 charitable institutions, and Rom. Cath. pop. 268,000. The Presb. reported 9 presbyteries, 300 churches, 391 ministers, 56,293 members, 352 Sunday-schools, 6,235 officers and teachers, 49,137 scholars. The Congl. reported 32 churches, 37 ministers, 4,447 members, 4,848 Sunday-school pupils; Meth. Prot. 33 churches, 21 itinerant ministers and preachers, 22 local ministers and preachers, 3,100 members, 35 Sunday-schools, 507 officers and teachers, 3,773 scholars; and the Univ. 7 parishes, 5 churches, 400 families, 382 members, 6 Sunday-schools, 617 teachers and scholars. At the sixth international Sunday-school convention, at Pittsburg, 1890, June 24–27, there were reported in N. J. 2,000 Sunday-schools, 33,709 officers and teachers, and 247,648 scholars—total members 281,357.

Education.—In 1894–5 there were 424,959 children of school age (5–20 years), of whom 274,270, or 64·55 per cent., were enrolled during the school year. The average daily attendance was 172,465, or 62·86 per cent. of the number enrolled; average number of days school kept during the year 192, aggregate days school given 34,640,156, or 126·3 per each pupil enrolled; there were 5,384 teachers employed (756 males and 4,628 females); 1,780 schoolhouses, estimated value \$11,819,712; income from permanent funds \$127,236, taxation \$4,380,973, total \$4,609,774; of expenditures \$1,021,681 went for buildings, sites, and furniture, \$2,898,942 for salaries, and \$641,008 for other purposes. High schools numbered 69 with 291 teachers, 7,155 secondary students (2,856 males, 4,299 females), and 33,073 pupils (16,293 males, 16,780 females) below secondary grades; graduates in 1895, 977 (337 males, 640 females), of whom 138 were college preparatory; libraries (55 schools) 34,480 vols.; total income (48 schools) \$470,720. Private schools of secondary instruction numbered 69, having 352 instructors, 4,029 secondary students (2,478 males, 1,551 females), and 2,614 elementary pupils (1,256 males and 1,358 females); graduates in 1895, 508 (326 males, 182 females), of whom 321 were college preparatory; libraries (44 schools) 41,310 vols.; total income (37 schools) \$324,361. Public normal schools numbered 3: Newark Normal and Training School, Newark; Paterson Normal and Training School, Paterson; New Jersey State Normal and Model Schools, Trenton. These had (1894–5) 28 teachers for normal students and 26 teachers in other departments; students in normal department 824 (135 males, 689 females), in elementary grades 835 (408 males, 427 females); children in model schools 1,287 (638 males, 649 females); income from public appropriations \$40,570, from tuition fees \$25,398, total \$65,968. There are five colleges of liberal arts: Rutgers Col., New Brunswick; Princeton Univ., Princeton; Seton Hall Col., South Orange; St. Benedict's Col., Newark; St. Peter's Col., J. C.; these had (1901) 162 profs. and instruc. and

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1,265 students. Of these students 360 (314 males, 46 females) were in the preparatory departments, 1,500 in collegiate departments, 111 in graduate departments, and 27 professional. There was one college for women, Bordentown Female College. There was one school of technology, Stevens Institute, at Hoboken, with 23 instructors and 241 students. The professional schools were: German Theological School of Newark (Presb.), Bloomfield; Drew Theological Seminary (M. E.), Madison; Theological Seminary of the Reformed (Dutch) Church in America, New Brunswick; Theological Seminary of the Presbyterian Church, Princeton, and Seton Hall, So. Orange. There were several schools for training nurses: N. J. Train. School for Nurses, Camden; Eliza. Gen. Hos. Train. School for Nurses, Elizabeth; Newark City Hos., Ger. Hos. and St. Barnabas Hos. Train. School. Newark; Orange Train. Sch. for Nurses, Orange; Gen. Hos.-nurse Train. School, Paterson; Hackensack Hos. Train. Sch., Hackensack; Mountainside Hos. Train. School, Montclair; Monmouth Mem. Hos. Train. Sch., Long Branch.

Among the special charitable educational and reformatory institutions were: New Jersey School for Deaf Mutes, Trenton; New Jersey Training School for Feeble-minded Children, Vineland; New Jersey State Institution for Feeble-minded Women, Vineland; Private Home and School for Enfeebled and Undeveloped Mind's, Cranbury; Haddonfield Training School, Haddonfield; State Reform School for Juvenile Delinquents, Jamesburg; State Industrial School for Girls, Verona; Newark City Home, Newark.

Illiteracy.—Total population (1890) 10 years of age and over 1,143,123, illiterate 74,321, or 6·5 per cent.; males, total 568,585, illiterate 35,413, or 6·2 per cent.; females, total 574,538, illiterate 38,908, or 6·8 per cent.; total white population 10 years of age and over 1,103,786, illiterate 63,163, or 5·7 per cent.; native white, total 788,401, illiterate 21,351, or 2·7 per cent.; foreign white, total 315,385, illiterate 41,812, or 13·3 per cent.; colored population 10 years of age and over, total 39,337, illiterate 11,159, or 28·4 per cent.

Finances and Banking.—In 1890 N. J. had property whose total value was \$1,445,285,114, of which \$961,013,972 was real estate and its improvements; the assessed value was \$893,859,866, or 61·85 per cent of the real value; *ad valorem* tax \$14,103,525, or \$9·76 per capita and \$1·58 per \$100 of assessed value. The entire debt was \$49,333,589, of which \$1,022,642 was state, \$3,728,130 county, \$42,990,338 municipal, and \$1,592,479 school district; annual interest charge \$3,134,726, or \$2·17 per capita and 5·85 per cent on the debt; total expenditures \$15,244,819, of which \$1,564,264 was state, \$2,528,204 county, \$6,609,826 municipal, and \$3,457,525 school district. On June 1, 1897, the entire debt of the state was \$593,400, of which \$594,000 was funded war loans at 6 per cent. On 1902, Jan. 1, N. J. was clear from debt, with the exception of \$116,000 certificates issued to the commissioners of the Agricultural College, under act approved 1895. June 13. Assessed property valuation in 1902, \$952,560,540.

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In 1884 a state board of assessors was created under an act entitled, "An act for the taxation of created under an act entitled, 'An act for the taxation of railroad and canal property;' and in the same year another act was passed, entitled, 'An act to provide for the imposition of state taxes upon certain corporations, and for the collection thereof.' Under these acts the tax for the support of the state govt. is levied only on the property of railroad and canal companies, and on the property, stock, or earnings of other corporations. The first act was opposed by one of the large railroad corporations in the various courts, and, when all had decided against its objections, it agreed with the state to refer the question of its indebtedness to arbitrators; and on the acceptance of their award by both parties, during the session of the legislature 1889-90, a vexatious financial problem was permanently solved. The railroad tax imposed under the act 1885 was \$1,315,264 on a valuation of \$189,696,652; (1886) \$1,337,265 on \$192,980,343; (1888) \$1,316,282; (1889) \$1,329,608; and the tax on 1,457 miscellaneous corporations (1888) was \$360,197; (1889) 1,281 corporations, \$314,972. The second act imposes a tax of $\frac{1}{10}$ of 1 per cent. on the capital stock of corporations incorporated under it and doing business out of the state, in addition to the certificate fee. The liberality of this law has led organizers and promoters of large corporations in various parts of the United States, in Mexico, and Central and S. America, to seek incorporation in N. J.; and many of the most successful corporations doing business in New York were organized in N. J., 200 of them paying \$87,000 taxes to the latter. During 1889 the sec. of state issued certificates of incorporation to 701 organizations, with a combined authorized cap. of \$175,754,850, and a cap. to begin business with of \$36,240,665. These totals were largely increased 1890, Jan.-July, two companies, of many, being incorporated with authorized cap. of \$50,000,000 each, on payment of a fee of \$10,000 each; and the indications were that about 2,000 such certificates would be issued during the year. In 1895 N. J. had 102 national banks with total loans and discounts outstanding of \$51,321,841. In 1902 N. J. had 127 national banks in operation with \$15,577.175 in capital, \$8,868,718 surplus and \$8,718,474 in outstanding circulation. 26 State banks, with \$2,318,750 in capital and \$1,067,305 surplus; 51 loan and trust companies, with \$8,250,000 in capital and \$3,296,240 surplus.

History.—The earliest known settlement was made by the Dutch from New Amsterdam (New York), at Bergen 1614-20; and having claimed the whole region as an unexplored part of the New Netherlands, they penetrated to the interior and erected Fort Nassau on the Delaware, 4 m. below Philadelphia, 1623. In 1634 the king of England granted the whole Delaware country to Sir Edmund Ployden, who called it New Albion; and 1638 a colony of Swedes and Finns made settlements in the same region, on land bought of the native Indians and renamed New Sweden. Soon afterward the Dutch and Swedes

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united, and expelled the English colonists; and later (1655) the Dutch, under Gov. Petrus Stuyvesant, of the New Netherlands, conquered the Swedes and returned most of them to Sweden. While the Dutch were strengthening themselves in the new country, the expelled English and Swedes sought redress from the king; but he, ignoring the claims of each party, granted to his brother, the Duke of York, the entire region between the Delaware and Connecticut rivers, 1664, and sent an expedition to take possession of it. The various settlements were forced to submission, and patents were granted to parties from Long Island and New England who desired to colonize. The first permanent settlement under the English was made at Elizabethtown, and Newark, Middletown, and Shrewsbury were founded soon afterward. While these settlements were being made, the Duke of York transferred his grant to Lord Berkeley and Sir George Carteret, who named the region New Jersey, after the island of Jersey, of which Carteret had been royal governor. Sir George Carteret sent his brother Philip as gov., and on his arrival with the first constitution of the colony, 1665, he established the seat of govt. at Elizabethtown. After an unpopular administration of five years, Philip was compelled by the people to leave the colony, and was succeeded for a short time by James, son of Sir George, afterward returning for a brief tenure of office. In 1673 Lord Berkeley sold his share in the grant to John Fenwick and Edward Byllinge, and the same year the Dutch recaptured New Amsterdam from the English and regained the whole province of N. J., which they renamed Achter Kol. In the following year the province reverted to the English by treaty, and the king made a new grant to the Duke of York, who in turn gave Sir George Carteret a fresh conveyance, but covering only a part of the original territory. The duke also included the province in a commission to Sir Edmund Andros, gov. of New York, thus uniting the provinces under one governor. This act led to serious interprovincial trouble, which culminated in the arrest of Gov. Philip Carteret by Gov. Andros, an investigation by the Duke of York, a termination of Gov. Andros's administration (1681), and a recognition of the rights of the two Quaker proprietors, John Fenwick and Byllinge. In 1682 the proprietors sold their part of the province to William Penn and his associates, and the province was divided into E. and W. Jersey, the boundary being a line from Little Egg Harbor to the Delaware river, at lat. 41° n., E. Jersey remaining under the jurisdiction of the English, and W. Jersey under that of the associates. Within a few months after the division, Penn and 11 other Quakers bought all of Carteret's rights in E. Jersey. Unlike nearly all other states, N. J. had no Indian troubles in its early history. Under the proprietors it grew rapidly in population and material wealth; but dissensions among them, over property rights, led them to surrender their corporate rights to the crown 1702, and Lord Cornbury was appointed gov. of N. Y.

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and N. J., though each had a separate assembly. In 1708 N. J. secured a separate administration under Gov. Lewis Morris, and her last royal gov. was William Franklin, son of the philosopher. In 1776 the colony adopted a state constitution, and the first legislature met in Princeton. During the revolutionary war the state was traversed several times by the American and British armies, the battles of Trenton, Princeton, Millstone, Red Bank, and Monmouth were fought on its soil, and important milit. movements were made elsewhere, as at Morristown, Springfield, and the Delaware river. The state adopted the federal constitution unanimously 1787, Dec. 18, established its capital at Trenton 1790, and adopted its present constitution 1844. During the civil war N. J. furnished 79,511 troops to the Union armies.

Government.—The executive authority is vested by the constitution in a gov. elected for 3 years and ineligible for re-election till after an intervening term, salary raised from \$5,000 to \$10,000 per annum at session 1889–90; the legislative in a general assembly, comprising a senate of 21 members elected for 3 years, and a house of representatives of 60 members elected for 1 year, salary of each \$500 per annum; and the judicial in a court of errors and appeals, court of chancery, supreme court, courts of common pleas, courts of quarter sessions, circuit courts, courts of oyer and terminer, orphans' courts, and justices of the peace. The court of errors and appeals is the last court of resort; has appellate jurisdiction only; holds 3 terms annually; is composed of the chancellor, the judges of the supreme court, and 6 other judges appointed by the gov.; and comprises the sole pardoning power of the state—the gov., chancellor, and 6 of its judges. The chancellor is appointed by the gov., with the consent of the senate, for a term of 7 years, annual salary changed from \$5,000 and fees to \$10,000; 2 vice-chancellors are appointed by the chancellor, salary \$5,000 per annum; sessions of the court are held 3 times annually at Trenton, and by the vice-chancellors in the n. and s. parts of the state. The supreme court is composed of a chief-justice, salary \$7,500 per annum, and 8 assoc. justices, salary of each \$7,000 per annum, all appointed by the gov. and senate for 7 years; and it holds 3 terms annually in Trenton. These judges also hold circuit and oyer and terminer courts 3 times annually in each co., and are also *ex officio* judges of the various co. courts. Sheriffs, coroners, and justices of the peace are elected by the people in their respective counties. The sec. of state receives a salary of \$6,000 per annum; treas. \$4,000; comptroller \$4,000; atty.gen. \$7,000; supt. public instruction \$3,000; adjt.gen. \$1,200; librarian \$1,500; U. S. dist. judge \$3,500; supt. U. S. life-saving service \$1,800, and 39 keepers \$700 each; and 3 collectors of internal revenue \$2,375–\$4,500 each. There were in N. J. in 1901, 929 postoffices of all grades, of which 12 were first-class, 43 second, 63 third, 803 fourth, 113 presidential, 613 money-order, and 78 money-order stations.

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The successive govts., with their terms of service, are as follows: *East Jersey*: Philip Carteret 1665-81; Robert Barkeley 1682-85; Thomas Rudyard (dep.) 1683; Garen Lawrie 1683; Lord Niel Campbell 1685; Andrew Hamilton 1692-97; Jeremiah Basse 1698-9. *West Jersey*: Samuel Jennings (dep.) 1681; Thomas Oliver 1684-5; John Skien (dep.) 1685-87; William Welsh (dep.) 1686; Daniel Coxe 1687; Andrew Hamilton 1692-97; Jeremiah Basse 1697-99; Andrew Hamilton 1699-1702. *East and West Jersey United*: Lord John Cornbury 1703-08; John Lovelace 1708; Richard Ingolsby (lieut.gov.) 1709-10; Andrew Hunter 1710-20; William Burnet 1720-27; John Montgomery 1728-31; Lewis Morris 1731-2; William Crosby 1732-36; John Hamilton 1736-38—these were also govts. of N. Y. at the same time. *Separate from N. Y.*: Lewis Morris 1738-46; John Hamilton 1746-7; Jonathan Belcher 1747-57; John Reading 1757-8; Francis Barnard 1758-60; Thomas Boone 1760-1; Thomas Hardy 1761-63; William Franklin 1763-66. *Revolution and State*: William Livingston 1776-90; William Paterson 1790-92; Richard Howell 1792-1801; John Lambert (vice-pres. council) 1802-3; Joseph Bloomfield 1803-12; Aaron Ogden 1812-3; William S. Pennington 1813-15; Mahlon Dickerson 1815-17; Isaac H. Williamson 1817-29; Peter D. Vroom 1829-32; Samuel L. Southard 1832-3; Elias P. Seeley 1833-4; Peter D. Vroom 1835-6; Philemon Dickerson 1836-7; William Pennington 1837-43; Daniel Haines 1843-4. *Under the New Constitution*: Charles S. Stratton 1844-48; Daniel Haines 1848-51; George F. Fort 1851-54; Rodman M. Price 1854-57; William A. Newell 1857-60; Charles S. Olden 1860-63; Joel Parker 1863-66; Marcus L. Ward 1866-68; Theodore F. Randolph 1868-72; Joel Parker 1872-75; Joseph D. Bedle 1875-78; George B. McClellan 1878-81; George C. Ludlow 1881-84; Leon Abbett 1884-87; Robert S. Green 1887-90; Leon Abbett 1890-93; George J. Werts 1893-96; John W. Griggs 1896-98; Foster M. Voorhees 1898-1902; Franklin Murphy 1902-05.

Counties, Cities, and Towns.—N. J. is divided into 21 counties. In 1880 the most populous counties were: Essex 189,929; Hudson 187,944; Passaic 68,860; Camden 62,942; Mercer 58,061; Union 55,571; Monmouth 55,538; Burlington 55,402; Middlesex 52,286; Morris 50,861; Hunterdon 38,570; Cumberland 37,687; Bergen 36,786; Warren 36,589; Somerset 27,162; Gloucester 25,886; Salem 24,579; and Sussex 23,539; 1885 (state census), counties: Hudson 240,332; Essex 213,764; Passaic 83,387; Camden 76,662; Mercer 65,825; Monmouth 62,314; Union 61,829; Burlington 57,558; Middlesex 56,180; Morris 50,735; Cumberland 41,982; Bergen 39,880; Warren 37,772; Hunterdon 37,420; Gloucester 27,603; Somerset 27,425; Salem 25,372; Sussex 22,401; and Atlantic 22,356. Cities and towns (1885): Jersey City 153,513; Newark 152,988; Paterson 63,280; Camden 52,884; Hoboken 37,721; Trenton 34,386; Elizabeth 32,149; New Brunswick 18,258; Orange 15,231; Bayonne 13,080; Bridgeton 10,065; Plainfield 8,913; and Millville 8,824. The

first estimate of the U. S. census 1890 gave Hudson co. 266,000; Essex 256,000; Passaic 104,000; Camden 85,000; Mercer and Union 80,000; Monmouth 65,000; Burlington and Middlesex 60,000; Morris 55,000; Bergen and Cumberland 45,000; Warren and Hunterdon 40,000; Gloucester and Somerset 30,000; and Atlantic, Salem, and Sussex 25,000. Cities and towns: Newark 181,220; Jersey City 162,317; Paterson 78,250; Camden 58,000; Trenton and Salem 56,000; Hoboken (including W. Hoboken) 54,819; the Oranges 49,297; Elizabeth 37,000; Bayonne 18,610; New Brunswick 18,452; Plainfield 15,927; Atlantic City 13,000; and Passaic 11,646.

Politics.—State (annual), congressional, and presidential elections are held on Tuesday after the first Monday in Nov. The legislature meets 2d Tuesday in Jan.; no limit of session; paupers, insane, idiots, and convicts are excluded from voting. The state govt. (1890) is democratic in gov., sec. of state, atty.gen., assembly, and joint ballot, and republican in treas., comptroller, and senate; republican majority in senate 1, democratic in assembly and on joint ballot 14. N. J. has 9 electoral votes. Her votes for pres. and vice-pres. have been as follows: 1788, George Washington, pres., 6, and John Adams 1 and John Jay 5, vice-pres.; 1792, George Washington and John Adams 7; 1796, John Adams and Thomas Pinckney; 1800, John Adams and Charles C. Pinckney; 1804, Thomas Jefferson and George Clinton 8; 1808, James Madison and George Clinton; 1812, De Witt Clinton and Jared Ingersoll; 1816, James Monroe and Daniel D. Tompkins; 1820, James Monroe and Daniel D. Tompkins; 1824, Andrew Jackson and John C. Calhoun; 1828, John Quincy Adams and Richard Rush; 1832, Andrew Jackson and Martin Van Buren; 1836, William Henry Harrison and Francis Granger; 1840, William Henry Harrison and John Tyler; 1844, Henry Clay and Theodore Frelinghuysen 7; 1848, Zachary Taylor and Millard Fillmore; 1852, Franklin Pierce and William R. King; 1856, James Buchanan and John C. Breckinridge; 1860, Abraham Lincoln and Hannibal Hamlin 4; 1864, George B. McClellan and George H. Pendleton 7; 1868, Horatio Seymour and Frank P. Blair, Jr.; 1872, U. S. Grant and Henry Wilson 9; 1876, Samuel J. Tilden and Thomas A. Hendricks; 1880, Winfield S. Hancock and William H. English; 1884, Grover Cleveland and Thomas A. Hendricks; 1888, Grover Cleveland and Allen G. Thurman 9; 1892, Grover Cleveland and Adlai E. Stevenson 10; 1896, William McKinley and Garret A. Hobart 10; Wm. McKinley and T. Roosevelt, 10.

Population.—(1790) white 169,954, free colored 2,762, slaves 11,423, total 184,139; (1800) white 194,325, free colored 4,402, slaves 12,422, total 211,149; (1810) white 226,868, free colored 7,843, slaves 10,851, total 245,562; (1820) white 257,409, free colored 12,460, slaves 7,557, total 277,426; (1830) white 300,266, free colored 18,303, slaves 2,254, total 320,823; (1840) white 351,588, free colored 21,044, slaves 674, total 373,306; (1850) white 465,509, free colored 23,810, slaves 236, total 489,555;

NEW JERSEY—NEW LEON.

(1860) white 646,699, free colored 25,318, slaves 18, total 672,035; (1870) white 875,407; colored 30,658, total 906,096; (1880) white 1,092,017, colored 39,099, total 1,131,116; (1890) 1,444,933; (1900) 1,883,669.

NEW JERSEY, COLLEGE OF: see PRINCETON UNIVERSITY.

NEW JERSEY TEA: see RED ROOT.

NEW JERUSALEM CHURCH: see SWEDENBORG, EMANUEL: SWEDENBORGIANS.

NEW JOHORE, *nū jō-hòr'*, formerly *Tanjong Putri*: Malay settlement on the s. extremity of the Malay peninsula. Here the Rajah or Tummongong of Johore, who is an independent sovereign, occasionally resides. The climate is healthful; large quantities of gambier and pepper are raised in the vicinity; saw-mills on an extensive scale are in operation. Vessels of the largest draught can approach close to the shore. The valuable timbers of these immense forests are yet scarcely known, but must find their way to the Indian, if not European, markets, ere long. Pop. in the N. J. territory about 20,000, chiefly Chinese.

NEW LAN'ARK: see LANARK.

NEW LEBANON, *nū lēb'a-non*: town, Columbia co., N. Y.; on the Lebanon Springs railroad, 24 m. s.e. of Albany, 18 m. n.w. of Chatham, 8 m. w. of Pittsfield, Mass. The villages of Lebanon Springs, Tilden's, New Lebanon Centre, New Britain, West Lebanon, and Mount Lebanon are included in the town limits. A fund was left by the late Samuel J. Tilden to found a free library in New Lebanon, in which town he was born. Lebanon Springs has repute as a summer resort. There are several thermal springs, of which the largest is of great power, furnishing water for the baths and for running three mills. The temperature of this spring is 73° Fahr. throughout the year. There are several machine shops; a vinegar factory; grist and saw mills; glass-works, and the oldest factory in the country for manufacture of barometers and thermometers. Medicines of various kinds are manufactured on a large scale. At Mount Lebanon the parent society of the Shakers in America was founded 1787, and this remains one of their leading settlements. There are about 600 members of the society. They have about 4,000 acres of land, and are engaged largely in the production of medical herbs and plants and in growing garden seeds. They have eight barns, one of which was long considered the finest in the United States. They are engaged also in fruit growing, and they manufacture large quantities of cider apple-sauce. In their numerous workshops chains, brooms, and baskets are made. In the town there are several good hotels. A medical journal is issued monthly. Pop. (1870) 2,124; (1880) 2,246; (1890) 1,765; (1900) 1,556.

NEW LE'ON: see NUEVA LEON.

NEW LONDON—NEW MALTON.

NEW LONDON, *nū lān'dūn*: city, port of entry, and one of the capitals of New London co., Conn.; lat. $41^{\circ} 22'$ n., long. $72^{\circ} 9'$ w., on the w. bank of the Thames river, 3 m. from Long Island Sound, 40 m. s.e. of Hartford, 50 m. e. of New Haven. The Shore Line division of the New York New Haven and Hartford, the New York Providence and Boston, and the New London Northern division of the Vermont Central road, give it rail communication with all points; and the Norwich line of steamers makes daily trips to and from New York. The harbor is one of the finest in the United States, and is superior to any other on the Atlantic coast. A dock 1,100 feet in length has been built at a cost of \$175,000. Large quantities of coal are brought to this point for distribution to the inland portions of New England, there is considerable coast trade, and a small fleet is engaged in the seal and other fisheries. The city is built on a sharp declivity, and from the hills which rise behind it fine views are obtained. A number of small islands, with fine stretches of sea beach, are within easy reach by small steamers, which, during the summer, make frequent trips and carry many visitors thereto. Among the public buildings are 3 fine churches of granite and 2 of brick; the court-house, built 1784; city hall; custom-house; railroad station; and three notable new structures: the public library, a massive and beautiful building erected with funds left for benevolent purposes by the late Henry P. Haven; the Williams Memorial Institute, an imposing building to be used as a high school for girls; and the Lyceum, a fine theatre building. There are 12 churches representing several denominations, a number of excellent schools, and 1 weekly and 2 daily newspapers. There are 3 national banks with capital \$550,000, 2 savings banks, 1 state bank, and 1 trust company. In the industrial line there are iron foundries, and manufactures of woolen goods, sewing silk, and agricultural machines, an establishment for canning fruit and a large cracker bakery. The streets are wide and well shaded, many of them paved, are lighted with gas, and the city has abundant water supply. There are good hotels, and many visitors spend their summers here. The national govt. has a navy-yard a little above the city on the opposite side of the Thames river. Forts Trumbul and Griswold, near by, are interesting for historical associations. The first settlement was made at N.L. 1645, and was called Pequot. The name was changed, 1658. During the revolution the city was burned by Arnold, 1781, and in the war of 1812 it was blockaded. The first whaling vessel from this port to the Pacific was sent 1821. Pop. (1880) 10,537; (1890) 13,759; (1900) 17,548.

NEWMAN.

NEWMAN, *nū'man*, FRANCIS: b. England; d. 1660, Nov. 18. He removed to what is now the state of N. H. 1638, and afterward joined the New Haven colony and became a leader in its affairs. Under Gov. Theophilus Eaton he was sec. of the colony, and 1653 asst. gov. and commissioner to Manhattan to seek redress from Gov. Stuyvesant for injuries which the New Haven inhabitants had received from the Dutch. He served the united colonies as commissioner 1654 and 58. In the latter year he was elected gov., and held this office till his death.

NEWMAN, FRANCIS WILLIAM: born 1805, London; brother of Cardinal John Henry N. He was educated at the school of Ealing, thence passed to Worcester College, Oxford, where he obtained first-class honors in classics and mathematics 1826, and, in the same year, a fellowship in Baliol College. This fellowship he resigned; and he withdrew from the univ. 1830, at the approach of the time for taking the degree M.A., declining the subscription to the Thirty-nine Articles, which was required from candidates for the degree. After a lengthened tour in the East, he was appointed classical tutor in Bristol College, 1834. In 1840 he accepted a similar professorship in Manchester New College, and, 1846, his great reputation for scholarship, and his general accomplishments, led to his being appointed to the chair of Latin, in University College, London, which he held till 1863. During all this time, he had not only been an active contributor to numerous literary and scientific periodicals, and to various branches of ancient and modern literature, but had also had a leading part in the controversies on religion, in which he had been directly opposite to his elder brother, being no less ardent as a disciple of the extreme rationalistic school than John Henry N. of the dogmatical. These opinions, and the system founded upon them form the subject of his well-known work, *Phases of Faith, or Passages from the History of my Creed* (1850); and of many essays in the *Westminster, Eclectic*, and other Reviews; but he is also author of very many separate publications. Of these, several regard the religious controversy—e.g., *Catholic Union; Essays Towards a Church of the Future* (1844); *A State Church not Defensible* (1846); *History of the Hebrew Monarchy* (1847); *The Soul, Its Sorrows and Aspirations* (1849). Others are on political or social topics—as, *Radical Reforms, Financial and Organic* (1848); *The Crimes of the House of Hapsburg* (1851); *Lectures on Pol. Economy* (1857); *Europe of the Near Future* (1871). A large number related to historical, classical, and scientific subjects, most important of which are *Contrasts of Ancient and Modern History* (1847); *Regal Rome* (1852); transla. into 'unrhymed metre' of the *Odes of Horace* (1853), and the *Iliad of Homer* (1856); a treatise on *Difficulties of Elementary Geometry: Handbook of Arabia* (1866); *Orthoepy* (1869), etc. He died 1897, Oct. 5.

NEWMAN.

NEWMAN, JOHN HENRY, D.D., Cardinal: 1801, Feb. 21—1890, Aug. 11; b. London. He was educated at the school of Dr. Nicholas, at Ealing, whence he passed, 1817, to Trinity College, Oxford, of which college he became a scholar by competitive examination 1818. Having graduated 1820, he was elected fellow of Oriel College 1822, where he attracted the notice of Dr. Whately, and was by him employed in the preparation for publication of his well-known *Treatise on Logic*, and introduced to the editor of the *Encyclopædia Metropolitana*, to which he became a contributor. He was ordained 1824; and in the following year, his friend Dr. Whately having been appointed head of St. Alban's Hall, N. was by him selected as his vice-principal; but on being named tutor in his own college 1827, as also public examiner, he resigned the vice-principalship. In 1828 he was presented to the vicarage of St. Mary's, Oxford, in which church the sermons which he delivered at a late period had an extraordinary influence in forwarding the religious movement with which his name is permanently associated. At this period, N. was an earnest antagonist of the Rom. Cath. Church. He was one of those who transferred their support from Sir Robert Peel to Sir Robert Inglis on occasion of the former's introducing the Rom. Cath. Relief Bill; and he was one of the most active in commencing and carrying on the so-called Oxford movement—the great object of which was to counteract as well the Romanizing as the dissenting tendencies of the time, by restoring and bringing into notice what N. and his friends believed to be the catholic character of the English Church. With this view, he commenced, 1833, the series known as the *Oxford Tracts*, to which he was himself one of the chief contributors; and 1838 he also became editor of the *British Critic*, an organ of the same views; also editor, in conjunction with Dr. Pusey and Keble, of a *Library of Translations from the Greek and Latin Fathers*. He continued the publication of the Tracts till Number 90, which was written by himself, and the tendency of which was so distasteful to the Anglican authorities that the Heads of Houses at Oxford condemned the Tract, and the bp. of Oxford called on N. to discontinue the publication—a request with which he at once complied. The *British Critic* continued to advocate the same opinions; but 1843 that publication also was discontinued; and N., who had for some time resided at Littlemore, near Oxford, engaged, in company with some of his more youthful adherents, in study and ascetic exercises, thenceforward confined himself chiefly to his Littlemore residence, and eventually, 1845, Oct., was admitted into the Rom. Cath. Church. This step he immediately followed by the publication of *Development of Doctrine*, a work intended as an explanation of the process through which the writer's own mind had passed. Soon afterward, N. repaired to Rome, where, after some preparation, he was admitted to orders in the Rom. Cath. Church; and 1848, on his return to England, he established a branch of the

NEWMAN.

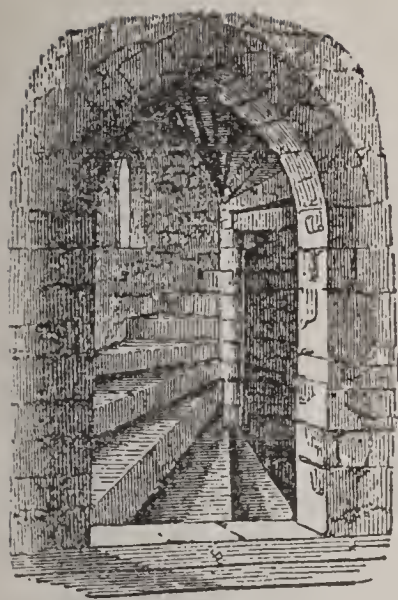
Congregation of the Oratory of St. Philip Nerl, of which he was himself appointed superior. In 1852 he was appointed rector of the Cath. Univ., established in Dublin, an office which he held till 1859, when he resigned and returned to the oratory at Edgbaston, where he had erected a large convent, church, high school, and several charitable institutions, and where he remained till his death. Dr. N., in addition to the large share which he had in the publications above named, was the author of several very important works, some before and some after his withdrawal from Anglicanism. Of the former period are his *History of the Arians*, *Prophetical Office of the Church*, *The Church of the Fathers*, *Essay on Miracles*, *Translation of the Treatises of St. Athanasius*, with many learned Dissertations and several vols. of sermons. To the latter period belong the *Development of Christian Doctrine*, *Lectures on Catholicism in England*, *Apologia pro Vitâ Suâ*, *Letter to Dr. Pusey*, *Essay on Assent*, and *Letter to the Duke of Norfolk on Mr. Gladstone's Expostulation* (1875). N. was also author of two religious tales, *Loss and Gain* and *Callista*, and of some fine hymns, of which *Lead, Kindly Light*, has been sung the world over. He was made a cardinal deacon of the church 1879. Cardinal N. was master of a faultless English style, whose pellucid flow revealed the depth of his thought and the devoutness and saintliness of his spirit. His course aroused strong antagonism, but even his antagonists revered him as a man.

NEWMAN, JOHN PHILIP, D.D., LL.D.: born New York, 1826, Sep. 1: bp. of the Meth. Episc. Church. He studied at Cazenovia (N. Y.) Seminary, and after a theological course entered, 1849, the ministry of the Meth. Episc. Church. After various pastorates he went abroad 1860. On his return he preached in Albany and New York, went to New Orleans, 1864, to represent this denomination at the south, and remained five years. He organized the Metropolitan Memorial Church at Washington 1869, and was chaplain of the U. S. senate 1869-74. In the latter year he became inspector of the govt. consuls in Asia. He returned, 1876, to the church that he had founded at Washington, and three years later he was appointed pastor of the Central Meth. Episc. Church in New York, with which he stayed three years, and was then (1882) engaged as acting pastor of the Madison Avenue Congl. Church in that city. After two years' service he resigned this charge, went to Cal., returned, and was with Gen. Grant in his last sickness, again returned, 1886, to his Washington church, and was elected bishop 1888. He was a member of the Society of Biblical Archæology, had great popularity as a preacher, and was in favor as a lecturer. Among his works are: *From Dan to Beersheba*, *Babylon and Nineveh*, *Christianity Triumphant*, and *America for Americans*. He died 1899, July 5.

NEWMAN—NEWMARKET.

NEWMAN, SAMUEL: 1602–1663, July 5; b. Banbury, Oxfordshire, England. He graduated from Oxford at the age of 18, took orders in the Established Church, removed to Mass. 1636, preached about two years at Dorchester, and was settled over the church (Congl.) at Weymouth 1638–43. With part of his flock he removed 1644 to Seconet, and founded the town of Rehoboth, which included what are now the towns of Seekonk, Mass., and Pawtucket, R. I. He was author of *A Concordance for the Bible*, which was printed at London and Cambridge, and, 1643–1720, passed through five editions. It was known as the Cambridge Concordance, and for a while was thought to be the first concordance printed in English. N. died at Rehoboth.

NEWMARKET, *nā mār'kēt*: market-town of England, famous for its horse-races; in a valley 13 m. e.n.e. of Cambridge: it is partly in the county of Cambridge and partly in Suffolk. It contains many well-built and elegant houses, among them the residences of gentlemen drawn to N. from their interest in the *Turf*. The market-house and the famous Jockey Club are the chief edifices. Malt-making and brewing are carried on; but the town owes its prosperity to the horse-races, and nearly half of the population are jockeys, grooms, trainers, or stablemen. The race-course of N., owned partly by the Jockey Club and partly by the Duke of Rutland, is said to be the finest in the world, and the training-ground bears a similar character for excellence. There are seven race-meetings held here annually. See HORSE-RACING. Pop (1871) 4,534; (1881) 5,160; (1891) 6,213.



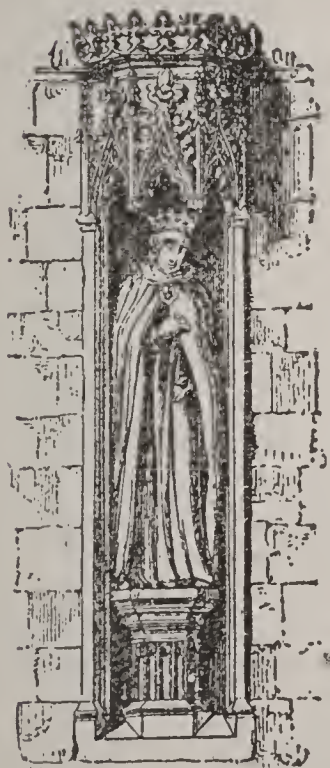
Ancient Stair, showing the Newel.



Smooth Newt (*Triton punctatus*).



Warty Newt (*Triton cristatus*).



Niche, All Souls' College, Oxford.



Nilometer.



Nimbus.

NEW MEXICO.

NEW MEXICO, *nū mēks'ī-kō*: a territory of the United States, within the limits of the region ceded by Mexico 1813 under the treaty of Guadalupe Hidalgo, and of the Gadsden purchase (s. of the Gila river) 1853, Dec. 30. As organized 1850, Sep. 9, the territory included the present N. M., and Arizona n. of the Gila river, with the s.e. point of Nevada, and about 14,000 sq. m. now a part of Colorado. To this the Gadsden purchase, 1854, Aug. 4, added the following: the part between 37° and 38° n. lat., and e. of the Rocky Mountains, set off to Colorado 1861, Feb. 28; and Arizona, including the s.e. point of Nev., set off 1863, Feb. 24.

Location and Area.—N. M. is in the s.w. of the United States; lat. $31^{\circ} 20'$ — 37° n, long. 103° — 109° w.; bounded n. by Colo., w. by Ariz., s. by Mexico and a westward extension of Tex., e. mainly by Tex.; width from e. to w. 335 m.; length of e. border 345 m., of w. border 390 m.; 122,460 sq. m. (78,374,400 acres); elevation above sea-level 3,000 to 13,150 ft.; cap. Santa Fé.

Topography.—The general surface of N. M. is that of a plateau, 6,000 to 6,500 ft. above the sea at the n. border, sloping toward the s. to about 3,000 ft. above the sea at the s. border, and crossed from n. to s. by the chief river of the terr., the Rio Grande, and by mountain ranges, between which lie the broad valleys fitted by nature for farms and vineyards. The Rocky Mountains enter from the n. upon this plateau in two ranges, having the valley of the Rio Grande between them: (1) the main range, e. of the valley of the Rio Grande, and extending s. about half-way to the centre of the terr., a line of lofty peaks connected continuously by high ridges, until its abrupt ending a little s.e. of Santa Fé; (2) a western range, consisting of many detached mountains, between which the connecting ridges are low, affording numerous passes. This w. range is known as the Sierra Madre, beginning from the very conspicuous San Antonio Mountain, near the s. line of Colorado, and ending with the Florida Mountains, which extend into Mexico. The more northern peaks of this range rise to 10,000 and 12,000 ft. above sea-level. Mt. Taylor, s.w. of Santa Fé, stands 10,000 ft. above the valley of the Rio Grande; but generally the summits of the range are 6,000 to 8,000 ft. above sea-level. In the main range, which brings the principal line of the Rocky Mountains to an end near Santa Fé, the great peaks are 12,000 to over 13,000 ft. above sea-level. An eastward spur of this range, under which the railroad entering N. M. from the n. passes through a tunnel, forms the Raton Mountains, a pass over which is 7,893 ft. above sea-level. From a point a little s. of Santa Fé, a broken range of mountains extends down the e. side of the Rio Grande valley, to the s. border, and thence into Mexico. To the e. of this range, a grand table-land, on which are many minor ranges of mountains, extends across to the valley of the Pecos, a river which rises from head-streams s. of the end of the main range of the Rocky Mountains, and takes a long

course s. into Texas, and finally into the Rio Grande. To the e. of the Pecos, the general surface, up and down the whole of the e. side of the state, slopes toward the Mississippi, as well as toward the Gulf of Mexico. The s. half of this slope is the w. part of a region extending far into Texas—the great Llano Estacado or Staked Plain, which is treeless and has no vegetation except just after rain, which rarely falls to any extent. The n. half of this slope has a system of streams, chiefly the upper course of the Canadian river and its many tributaries. West of the Sierra Madre, near the Arizona border, occur detached ranges forming part of the divide from which the waters flow w. to the Pacific and e. or s.e. to the Rio Grande and the Gulf of Mexico. Among these mountains run great cañons, through which the streams pass, and many examples occur of the *mesas* or table-lands, which stand apart, separated by cañons and appearing like vast fortresses or castles. The valley of the Rio Grande and that of the Pecos both show many tributaries of these streams, and form vast belts of valuable agricultural or grazing land. Among the mountains occur many parks of great natural beauty and fertility. The n.w. of the state, watered by the Rio San Juan, which flows to the Colorado, is called the San Juan country. In the central w. are the head-waters of the Little Colorado; and in the s.w. those of the Gila, which flows across Arizona to the Colorado.

Climate.—The delightful and healthful air of N. M. has given it repute as a sanitarium. During the year 1888, Sep.—1889, Aug., the thermometer showed a mean temperature from 24° in Jan. to 70° in July and Aug., the extremes being 1° below zero and 90° above. The rainy season begins about the middle of July, and continues through Aug. The average rainfall, during 1874–89, at Santa Fé has been 5 $\frac{2}{3}$ in. in the two months named, and 15 to 17 in. for the year at points in the n., the w., the s.w., and the s.e. The inhabitable mountain regions, 5,000 to 10,000 ft. above sea-level, afford a summer climate equalled by but few regions; while in the s. parts, at an average elevation of 3,000 ft., the air is mild and pleasant for winter residence. A few hours' ride gives the change from the summer heat of the valleys to the healthful air of the mountains. In summer even the heat of the day is not extreme, and the nights are always cool and invigorating. At all seasons of the year, rains are much more frequent in the mountains than in the valleys, and the mildness of the climate combines with this to make mountain agriculture practicable and profitable. Much attention is given to planting of trees where timber is lacking. The extensive and heavily timbered forests in some parts of N. M., comprising fully 2,000 sq. m. of fine timber, are mostly distant from railroads and settlements, and not yet developed as a source of timber supply. The quantity of pine, in nearly all the hilly and mountainous parts, is almost inexhaustible; and spruce, cedar, and other evergreens are

abundant. The piñon or nut-pine extensively clothes the foot-hills, cottonwoods and sycamores form belts along the rivers, and in the s. are many groves of oak and walnut, also some ash and maples. Among the natural plants of N. M. are different varieties of the yucca, growing everywhere on the plains; and one of these, *Y. filamentosa*, called amole or soap-weed, has a fibre useful for rope-making, and the smaller kinds for paper-making, while the root gives an excellent substitute for soap. The cañaigre also, which has valuable tanning properties, occurs in great abundance.

Geology.—The central plateau of N. M., between the Rio Grande and the Pecos, rests for the most part on tertiary and lower cretaceous rocks. The mountains on it are composed chiefly of syenite rocks, the upheaval of which has broken through paleozoic sandstones and carboniferous limestones. The limestones sometimes occur on the summits, but more commonly on the flanks of the ridges. A characteristic feature of N. M. are the *mesas* or table-elevations formed by the sandstones. In many places a cover of extensive layers of lava is found spread over the sandstone strata. Deep cañons are formed by the cutting through of the sandstones by the streams, which now flow through these cuts, between perpendicular walls, which in the cañon of the Rio Grande w. of Taos are over 1,000 ft. in height. Beds of gypsum and variegated marls are exposed in many places, and very frequently beds of lignite and bituminous coal, alternating with layers of iron ore, fire-clay, and shales, the latter often filled with large fossil leaves. Dikes of porphyry are common; and where the eruptions and overflows have acted upon coal formations, anthracite of the best quality is found. Hot and mineral springs are frequent; and numerous salt lakes—in the region, especially, s. of Santa Fé and between the Rio Grande and the Pecos—supply abundance of salt for both N. M. and the n. of Mexico, adjacent.

N. M. contains practically inexhaustible stores of all the precious and useful metals, from gold to iron, and especially extensive deposits of anthracite, lignite, and bituminous coal, the measures aggregating fully 4,000 sq. m. of at least 10-ft. veins of coal. The richest mining district is the Cerillos, equal to about 50 m. square, and embracing s. Santa Fé and e. Bernalillo cos. The deposits are gold, silver, lead, copper, and iron: the notable Big Copper mine, which was closed some years since by litigation, is now worked again. The early Spanish colonists worked silver mines in this district, the drifts, tunnels, and shafts of which have been found, although the openings to them have been filled up and obliterated since the Pueblo Indian insurrection 1680, in which so many of the Spanish were slaughtered or driven away, and in later years permitted to return only on condition that the mines should never again be worked. The Moreno gold-fields of the e. slope of the Rocky Mountains, in Colfax co. n.e. from Santa Fé,

those of the Pinos Altos district, in Grant co. in the s.w., and those of several ranges in Lincoln co., Socorro co., Rio Arriba and Taos cos., are other notable mines awaiting development. Lack of water, of settled business conditions, and of capital, has delayed operations which will ultimately yield incalculable wealth. The total mineral product of the terr. (1886) was \$3,821,871; (1887) \$4,229,234. The silver is as yet little developed, though more than half the counties of N. M. contain vast stores yet to be mined; the copper mines are of immense richness; there is as much lead as in any lead regions anywhere, and as much iron of the best quality as in any iron districts; and not only an unlimited quantity of coal, but the only perfect anthracite w. of Penn. Zinc, manganese, and quicksilver are found; and marbles of rare quality, mica, cement, gypsum, and fire-clay in inexhaustible amount.

Zoology.—The animals native to N. M. are the elk, antelope, deer, mountain sheep, bear, cougar, wolf, lynx, coyote, ocelot, hare, squirrel, weasel, beaver, with wild turkeys, geese, ducks, prairie-hens, and sage-hens.

Agriculture.—About 8,000,000 acres of N. M. are natural agricultural lands, easily supplied with water, producing wheat of the finest quality, corn, oats, and barley, all kinds of fruits in great perfection, and abundance of the finest grapes. But the bulk of the land is natural pasturage; and stock-raising, with a system of great ranches, was an early result of development of the terr. under U. S. control. It is found, however, that by systematic irrigation very profitable tillage may be extended over much of the natural pasture, and an extended system of small farms made to take the place of great ranches. The valleys of the Rio Grande and Pecos, which are from a mile to 4 m. wide, sometimes broadening to 10 m., are unsurpassed for easy irrigation and tillage; and the table-lands above the valleys are generally accessible to irrigation properly carried out, thus adding immensely to the agricultural possibilities of the terr. It is estimated that the tillable area of 8,000,000 acres, under the old system of rude and wasteful irrigation, may by a proper system be increased to 60,000,000 acres. The Rio Grande alone has a watershed of 20,000,000 acres; and the floods of the rainy season not only give water enough to supply it for a year, but they annually destroy as much in property values as would pay the cost of a system of storage to hold this water back and provide for the entire table-land area. A beginning of this work has been made. The valley of the Pecos has the same character as that of the Rio Grande, and here the Pecos Irrigation and Investment Co. is constructing two canals—one of 40 m. in length, 35 ft. wide at the bottom, and designed to carry a stream 7 ft. deep; the other 50 m. long, 45 ft. wide at the bottom, and carrying a stream 7 ft. deep. They tap the Pecos river, the second 45 m. lower down than the first. Between them, reservoirs are provided, of which three being constructed

are to be—one a lake $7\frac{1}{2}$ m. long, $2\frac{1}{2}$ m. wide, 40 ft. deep; one $1\frac{1}{4}$ m. long, $\frac{3}{4}$ m. wide, 12 ft. deep; and one $1\frac{3}{4}$ m. long, 1 m. wide, 18 ft. deep. These works will water 200,000 to 300,000 acres of land. There are more than 30 other corporations for providing irrigation in different parts of N. M.; and the system is capable of indefinite expansion. The adaptation of the irrigated lands to fruit and vine culture promises to put this industry above all others, especially in the Rio Grande and Pecos valleys; but other valleys, as the Taos and Mora, are equally fine for wheat. The mountain farms only are favorable to potatoes; but onions, beets, turnips, cabbages, cauliflowers, and almost all vegetables, everywhere return large crops. A natural product of N. M., of great value for stock, is the variety of nutritious grasses covering the valleys, foot-hills, and table-lands. The best of these, the mezquite or gama grass, ripens in the autumn and gives ample supply of fodder through the winter. The alfalfa, or California clover, has come into extensive cultivation as food for stock. It is harvested in different latitudes two to five times a year, and is valuable as a meat-producing food. The raising of sheep has not been maintained at the figures of a few years since, the winters of 1887-8 and 1888-9 having been unfavorable, and low prices having prevailed. The cattle industry also has suffered from low prices. The number of live stock in N. M. (1890) was: horses 38,130, mules and asses 8,367, oxen 4,990, milch-cows 18,507, other cattle 554,014 swine 10,471, sheep, not including spring lambs, 1,248,970. In 1896 the sheep numbered 2,595,652, and the wool-clip was, unwashed and washed 12,329,347 lbs., scoured 5,671,500 lbs. The hay crop (1896) was 120,637 tons worth \$965,096, from 46,221 acres; corn, 26,956 acres, 733,203 bu., value \$410,594; wheat, 39,669 acres, 809,248 bu., value \$590,751; oats, 9,869 acres, 393,773 bu., value \$177,198. The use of the cañaigre, which grows wild. In 1900 N. M. had 12,311 farms, comprising 5,130,878 acres of which 326,873 acres were improved and 4,804,005 unimproved; and all farm property was valued, including buildings, implements, machinery, live stock, \$31,727,400.

Manufactures.—Hardly any development of manufacturing industry has yet been made (1890) beyond that of flouring and grist mills, saw-mills, planing-mills, quartz-mills to some extent, and the minor forms of manufacture required by settled communities. In 1900 N. M. reported 420 manufacturing establishments, employing \$2,698,786 capital and 2,600 person, paying \$1,350,586 for wages and \$2,914,138 for materials used, and yielding products valued at \$5,605,795.

Commerce.—N. M. has no exports except the products of her mines and flocks—ores, sheep, and cattle. The railroads within the terr. have been built mainly for carrying lines through to states beyond, and commerce has made but a small beginning.

Railroads.—In 1880 N. M. had 758 miles of railroad, (1890 1,388.77, (1893) 1,432.5, (1894) 1,510.36, (1895)

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1,505.03, (1901) 2,181. The capital stock (1895) was \$89,079,100, funded debt \$45,619,629, total investment \$177,261,938, gross earnings \$3,687,416, of which \$737,553 was from passenger and \$2,556,574 from freight traffic; net earnings \$407,231; interest paid on bonds \$1,183,398. The principal lines were the Atchison Topeka and Santa Fé, Southern Pacific, Union Pacific, Denver and Gulf, Atlantic and Pacific, Denver and Rio Grande, and the Pecos Valley Silver City and Northern.

Religion.—In 1870 the Roman Catholics had 152 of the 158 churches of N. M., owing to the mass of the population being Spanish in descent, or converts to the Spanish faith. In 1888-9 the different denominations reported—Presb., 25 churches, 903 members; Prot. Episc., 16 churches, 339 members; Meth. Episc., 7 churches using English, 265 members, and 15 using Spanish, 654 members; Bapt., 9 churches, 134 members; Congl., 5 churches, 130 members; Rom. Cath., 39 parish churches, and 262 chapels opened once a month, 8 convents, 2 colleges, 6 academies, and an orphan asylum, an archbishop, 36 secular and 12 regular priests.

Education.—Popular education was in a lamentable condition 1850-60. The earliest attempt at a system, 1859-60, required a school in each settlement, a tax of 50 cts. for each child, the probate judge to act as co. supt., and the justices of the peace to employ teachers and enforce attendance from Nov. to April. This was the system for some years. 1863-84 a number of acts created a school system with good promise of efficiency. The present law provides for a supt. for each of the 14 counties, and a board of three directors in each school district. It levies a general tax of 3 mills on the dollar upon all prop. In 1900-1 there were 59,798 children of school age (5-18 years), on whom 36,735 were enrolled in public schools; there were 7 high schools with 24 teachers and 282 pupils; 5 private secondary schools with 13 instructors, 133 secondary students (98 male and 35 female); two public normal schools with 9 teachers and 53 students. The terr. has no supt. of public instruction, and, with much recent progress, the system in operation has defects yet to be remedied! Admission as a state is desired, to secure from grants of public land a basis for the public-school system. One-fourth of all taxes is applied to education; and besides the public schools there are many private schools and academies, prominent among which are the Jesuit college at Las Vegas, that of the Christian Brothers at Santa Fé, and academies at Albuquerque and Las Vegas. The legislature of 1888-9 passed an act providing for a state univ. at Albuquerque, an agricultural college at Las Cruces, and a school of mines at Socorro. Newspapers of N. M. number 50, of which 8 are daily, 44 weekly and 1 monthly.

Illiteracy.—Total population (1890) 10 years of age and over 112,541, illiterates 50,070, or 44.5 per cent.; males 61,885, illiterates 20,969, or 33.9 per cent.; females 50,656, illiterates 29,101, or 57.4 per cent.; white population 10 years of age and over 104,103, illiterates 43,265, or 41.6

per cent.; native white, total 93,625, illiterates 40,065, or 42·8 per cent.; foreign white, total 10,478, illiterates 3,200, or 30·5 per cent.; colored population 10 years of age and over 8,438, illiterates 6,805, or 80·6 per cent.

Finances and Banking.—Total bonded (1902, Dec. 1) was \$1,122,200, sinking fund \$114,083. Assessed valuation (1902) \$38,633,993; which is one-third value; tax rate was \$13.99 on each \$1,000. There were 15 national banks in N. M. (1902) with \$1,011,800 capital, \$172,500 surplus, \$547,500 in U. S. bonds on deposit, and \$590.210 in outstanding circulation; 12 state banks with \$397,400 capital, and \$14,035 surplus; 16 private banks with \$209,724 capital. The valuation (1889) was \$46,041,010. Under the finance act of 1889, the total expenses in the year ending 1890, Mar. 3, were \$149,430, and the territorial debt was: outstanding warrants \$150,000; capitol building bonds \$200,000; penitentiary-building funds \$120,000; capitol contingent bonds \$50,000, current expense bonds \$150,000; provisional indebtedness bonds \$200,000; total \$870,960.

History.—The settlement of N. M. by Europeans, in connection with Spanish conquest, is of a date earlier than the original planting of English colonies in Va. and Mass. The civilization, moreover, found by Spanish conquest was far beyond anything then existing within the present United States. At a time when the whole Atlantic coast and the entire valley of the Mississippi were untilled forest or prairie, roamed by savages, N. M. was occupied by an agricultural, pastoral, and mining Aztec or Toltec people, who built cities with houses of four stories, raised cotton and wool for clothing, corn, beans, and melons for food, manufactured good flour and pottery, had towels with tasselled ends as now, used clothing the material of which was ornamented in colors, had effective weapons of war, used methods of irrigation, and cultivated the soil, with large returns in a variety of crops. The early Spanish adventurers penetrated into what is now N. M. 1537, 39, and 40. Later Spanish explorers, 1581, called the country New Mexico, because of the very great mineral wealth they found there. About 1595-99 the Spanish viceroy caused Juan de Oñate to take possession, establish forts, plant colonies and missions, open and work mines, and subject the natives at once to the religion and the service of the Spaniards. The severity of the labor in the mines, to which the natives were forced, occasioned outbreaks, and finally, 1680, a successful revolution, which drove out the Spaniards, who did not recover possession again until 1698. The revolution which overthrew Spanish power in Mexico, 1822, gave freedom to N. M. also; and it was governed with Mexico until, 1846, a small United States force under Gen. Stephen Kearny captured Santa Fé, gained control of the whole terr., and secured its cession to the United States 1848, under the treaty of Guadalupe Hidalgo. The terr. of N. M. was organized 1850, Sep. 9, and an extensive addition to it, known as

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the Gadsden Purchase, secured by a treaty of 1853, Dec. 30. The terr. of Arizona was set off from it 1863. Feb. 24. N. M., as then constituted, adopted a state constitution and elected senators and representatives, expecting admission to the Union, in 1850, but was kept out through the compromise measures of that year. It was for a time proposed to secure the admission of N. M. as a state under the name of Lincoln. Efforts for statehood were made 1861, 63, 66, 69-71, 72, and 73-74; and before, 1875, a bill passed the house, and the senate also, but with amendments in the latter which failed to obtain the concurrence of the house. In 1876 a bill passed the senate, and was reported favorably in the house, but not acted on. At a convention at Santa Fé 1889, Sep. 3-25, a constitution for a state of N. M. was framed, to be submitted to popular vote 1890, Nov., or earlier if congress should by an enabling act permit state action to be taken. In 1859 the legislature of the terr. recognized slavery by law, but in 1861 repealed this, and also abolished the old system of peonage—a form of slavery which had existed 250 years. Attempts were made 1860-1 to control N. M. in the interest of the Confederacy; but the action of Colorado and California, and the disposition of the people of N. M., entirely defeated these.

Government.—The act creating N. M. a terr., 1850, Sep. 9, provided that the pres. of the United States should appoint, for four years, a gov. at a salary of \$1,500, to act also as supt. of Indian affairs, with \$1,000 additional salary; a sec. at \$1,800 salary (to be acting gov. in case of necessity); atty. at \$250, marshal at \$200 and fees, and three justices of the supreme court at \$1,800 each. A legislature was authorized, consisting of a council of 13 elected for 2 years, and a house of 26 elected for one year, to hold annual sessions of 40 days—no act to be valid until submitted to cong. and approved. A delegate to each cong. was to be elected by the people. The justices of the supreme court were each to reside and hold district court in one of the three districts assigned them, and the whole court to hold an annual session at the capital. Lower executive or judicial offices have been filled either by election in the legislature or appointment by the governor.

The successive govts. of the terr., with their terms of service, have been: James S. Calhoun 1851-2; Wm. Carr Lane 1852-3; Solon Borland 1853; David Meriwether 1853-57; Abraham Rencher 1857-61; Henry Conolly 1861-65; Robert B. Mitchell 1865-67; W. F. M. Army (acting) 1867-69; Wm. A. Pile 1869-71; Marsh Giddings 1871-76; Samuel B. Axtell 1876-78; Lewis Wallace 1878-81; Lionel A. Sheldon 1881-85; E. G. Ross 1885-88; L. B. Prince 1888-93; W. T. Thornton 1893-97; M. A. Otero 1897-96.

Counties, Cities, and Towns.—N. M. had (1890) 14 counties. In 1890 the most populous *counties* were: San Miguel 24,204; Bernalillo 20,913, Valencia 13,876; Santa Fé 13,562; Rio Arriba 11,534; Mora 10,618; Taos 9,868; Grant 9,657;

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Socorro 9,595; Doña Aña 9,191; and Colfax 7,974; *cities and towns*: Santa Fé 6,185; Albuquerque (new) 3,785; Las Vegas 2,385; E. Las Vegas 2,312; Silver City 2,102, and Albuquerque (old) 1,733.

Indians.—There are 19 towns of the Pueblos, with a Pueblo agency at Santa Fé. These people have been industrious, moral, and orderly for 350 years, owning their lands and homes. The Navajos, living on a reservation, number 21,000, and own horses 250,000, sheep 700,000, goats 200,000, cattle 5,000, burros 1,000, and mules 500. Their wool clip, 1888-9, reached 2,100,000 lbs. The Mescalero Apaches, occupying a reservation, number nearly 500. The whole number of Indians has not varied much in the last 25 years from 26,000 to 28,000.

Population.—(1850) 61,547; (1860) 80,567; (1870) 95,573; (1880) 109,793; (1890) 153,593; (1900) 195,310.

NEW MILFORD—NEWNHAM COLLEGE.

NEW MILFORD, *nū mīl'ford*: town, Litchfield co., Conn. It is on the Housatonic river and railroad, 35 m. n. of Bridgeport, 16 m. n. of Danbury, 40 m. s.w. of Hartford. The streets are nicely shaded, there is a fine common, and a park association is maintained. A weekly newspaper is published, there is a high school, and the town has banking facilities. It is one of the principal centres of the tobacco-packing interest in New England. Navy buttons are manufactured in large quantities. Pop. (1870) 3,586; (1880) 3,907; (1890) 3,917; (1900) 4,804.

NEWNHAM COLLEGE, *nūn'am*: one of the four highest colleges for women in England (N. and Girton at Cambridge Univ., and Lady Margaret and Somerville halls at Oxford). It was started 1871, as a home for women residing in Cambridge to attend university lectures, offered to them by such men as Prof. Henry Sidgwick and Frederick D. Maurice, with a view to the Cambridge Higher Local examinations, or later, 1874, to the Tripos examinations, to which full admission was granted by the univ. authorities 1881, Feb. 24, but with the right to a certificate only, without the degree given to men. The original N. C. was a house in charge of Miss Clough, sister of the radical poet. After changing more than once to larger quarters, two buildings were erected, now known as the North and South halls of N. C. They stand in large grounds, and are supplied with laboratories, tennis-courts, and gymnasium. The last of the two was opened 1879, in charge of Mrs. Henry Sidgwick as vice-principal of N. C., Miss Clough being principal. Miss Helen Gladstone, a daughter of the statesman, succeeded Mrs. Sidgwick 1882. A third building, the West Hall, has been erected adjoining North Hall. There is a fourth building, the Red House, which receives the overflow of students. The four buildings have rooms for 163, and some outstudents live with parents or guardians in the town, or, if past 30 years of age, choose their own lodgings. Instruction is given by five resident women lecturers, by three natural-science teachers who reside in the town, by university professors who lecture at the college, and by others whose lectures to men the women students attend. The highest university examinations are taken by the women students, and with notable success, Miss Philippa Fawcett's rank in 1890 being much above that of the male senior wrangler, giving her the most eminent rank among the students in all England.

Of 355 students at N. C. 1871, Oct.—1886, June, 30 students became head mistresses, and 101 assistant mistresses, in high schools; 13 became members of the staff of the college, 5 are professors in American colleges, and 10 fill important positions.

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NEW ORLEANS, *nū awr'le-anz*: city, cap. of Orleans parish, port of entry, and metropolis of La.; the twelfth city of the United States in population according to the census of 1900, popularly known as "the crescent city."

It is in lat. $29^{\circ} 57'$ n., long. 90° w.; greatest length w. to n.e. 22 m.; greatest breadth, n.e. peninsula, 10 m.; on both sides the Mississippi river, but mainly on the e. bank, 107 m. above the delta at the Gulf of Mexico; statutory area 187 sq. m., drainage district 60 sq. m.; has St. Bernard parish, 4 m. s. of its centre, for s. boundary; Carrollton parish, $6\frac{1}{2}$ m. n. of its centre, for n. boundary; and extends back 5 m. to Lake Pontchartrain. It is built on the alluvial bank of the river; slopes from the river to a marshy tract in the rear; is wholly below high-water level; and is protected from river overflows by a levee 15 ft. wide and 4 ft. high, erected along the bank as far as the lake, and from lake backwater by a lake-front levee. The city is divided into two parts by Canal street—the old or French and the new or American; and as it occupies an S-shaped bend 10 m. long, on the n. side of the river, the streets have been laid out to conform for the most part to this bend. Those running parallel to the river and to each other present unbroken views from the lower to the upper limits of the city, while those at right angles to them extend from the river toward the lake, following the bend. In general, the streets are narrow, seldom exceeding 40 ft. in width; but there are many beautiful boulevards, averaging 210 ft. in width, in both parts, such as Canal, Claiborne, Rampart, Esplanade, and St. Charles. It has about 700 miles of streets of which 205 miles are paved. Two popular drives of shell-road extend to Lake Pontchartrain and Carrollton.

The climate is never extreme; the temperature averages 69° F., and frost is seldom seen. The annual mean rainfall is 57 in.; mean annual height of barometer 30.075 in.; average maximum temperature 90.31° , average minimum 48.62° . The liability of epidemics of yellow fever, now lessening annually, induces many not natives nor old residents to leave the city during July, Aug., Sep., and Oct.; but considering the character of the ground and the neighboring marshes, the climate is both agreeable and healthful—indeed, its average healthfulness compares favorably with that of other American cities.

The most notable building is the U. S. Custom-house, the largest public building in the United States, excepting the capitol and treasury building at Washington. It is on Canal and Custom-house streets and Old and New Levee streets, is of Quincy (Mass.) granite, was begun 1848, and covers nearly 83,000 sq. ft. Then follow the branch of the U. S. Mint, on Esplanade and Old Levee streets, from a window of which, under the front portico of the main building, Gen. Butler had Mumford hung 1862; the City Hall, on St. Charles and Lafayette streets, an artistic Ionic structure of white marble: the venera-

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ble Tusco-Doric court-houses in Jackson square, on each side the Cathedral of St. Louis (Rom. Cath.), which has a lofty steeple, two towers, each with a smaller steeple, and was begun 1792, completed 1794, and enlarged 1850; the Merchants' Exchange, a marble structure on Royal street; costly and imposing Masonic and Odd Fellows' halls; St. Patrick's Hall, whose concert-room seats 3,500 people; Hotel Royal, formerly the St. Louis Hotel, and for some years prior to 1874 the State-house; Exposition Hall, on St. Charles street; Mechanics' Institute, Dryades street; Sugar Exchange, on the levee at foot of Bienville street; Produce Exchange, Magazine street; new Cotton Exchange; Howard Memorial Library, erected by Miss Annie Howard in memory of her father; Sophie Newcombe Memorial College, erected by Mrs. Newcombe in memory of her daughter; Sophie C. Hart Day Nursery, endowed by W. O. Hart in memory of his deceased wife; the noted Charity Hospital; U. S. Marine Hospital; the Hôtel Dieu; French Opera-house; Acad. of Music; St. Charles, National, and Varieties theatres; and the attractive and picturesque French Market, on the levee near Jackson square. There are 17 public squares and parks. The largest, City Park, comprises 150 acres in the n.e. part of the city, is tastefully laid out, and was the scene of the World's Fair and Cotton Exposition 1884-5. Jackson square, on the river-front, a popular resort, contains an equestrian statue of Andrew Jackson; Lafayette square contains a marble statue of Benjamin Franklin; Beauregard and Annunciation squares and Lee (formerly Tivoli) circle are attractive spots; and so also is Canal street between St. Charles and Royal streets, in the vicinity of the bronze statue of Henry Clay. The cemeteries are worthy of a stranger's notice from their peculiar arrangement, the semi-fluid soil preventing earth interments, and requiring all tombs to be placed above-ground. In and near the city are 33 cemeteries in all, of which Cypress Grove, Greenwood, and St. Louis No. 1 are the most notable.

In 1880 there were 915 manufacturing establishments, employing 9,504 hands, using capital \$3,565,303, paying wages \$3,717,557, using materials valued at \$10,771,892, and yielding products valued at \$18,808,096. The chief industry according to capital employed was cotton-compressing, which had 19 establishments, employed capital \$2,135,000, paid wages \$399,780, materials \$105,788, and received \$747,500 for products. Next was the manufacture of cotton-seed oil and cake, which had 7 establishments, employed capital \$785,500, paid wages \$275,165, materials \$1,630,150, and received \$2,751,150 for products. Then followed foundry and machine-shop products, 22 establishments, capital \$738,375, wages \$405,745, materials \$596,800, products \$1,228,300; refined sugar and molasses, 4 establishments, capital \$385,000, wages \$50,000, materials \$1,340,000, products \$1,483,000; tobacco—chewing, smoking, and snuff—8 establishments, capital \$348,000, wages \$70,540, materials \$242,100, products

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\$424,085; and rice cleaning and polishing, 6 establishments, capital \$225,000, wages \$56,040, materials \$1,328,387, products \$1,573,281. In 1889 there were 2,298 manufacturing establishments, employing 24,297 hands, and yielding products valued at \$44,328,000. The chief industries were: sugar and molasses refining, capital \$8,222,000; men's clothing \$2,962,000; rice cleaning and polishing \$2,923,000; cotton-seed oil \$2,284,000; boots and shoes \$2,250,000; malt liquors \$1,852,000; foundry products \$1,781,000; women's clothing \$1,728,000; and carpenter-work \$1,622,000. The tobacco industry had doubled 1888, and showed 188 establishments, and products—33,120,667 cigars, 33,888,245 cigarettes, 1,683,638 lbs. of manufactured tobacco, 141,916 lbs. of perique, and 37,824 lbs. of snuff. N. O. is the first cotton market in the United States, and, after Liverpool, the first in the world. In 1900 there were reported 1,524 manufacturing establishments employing \$46,003,604 capital and 19,435 persons; paying \$7,645,167 for wages and \$43,361,525 for materials used, and yielding products valued at \$63,514,505.

The large commerce of N. O. is promoted by 6 trunk and 2 other lines of railroad, and by ocean steam-ships and sailing-vessels connecting the city with the principal American and European ports. During the fiscal year ending 1889, June 30, the imports of merchandise aggregated \$14,492,480; domestic exports \$83,222,734; foreign exports \$606,242: imports of coin and bullion \$391,112; domestic exports \$2,000; foreign exports \$54,740. The entrances were 743 vessels of 770,047 tons, of which 169 vessels were American and 574 foreign; clearances, 735 vessels of 766,204 tons—162 American, 573 foreign; 136 American and 483 foreign steam-ships entered, and 130 American and 486 foreign cleared. There were 287 sailing-vessels of 9,169 tons, and 21 steam-vessels of 28,453 tons (308 vessels, 37,622 tons), registered and licensed at the port. The trade with Mexico and the W. Indies for domestic trans-shipment is very large and annually increasing. The harbor of N. O. is the focus of 100 navigable rivers and of nearly 25,000 m. of navigable channel.

The 6 trunk-lines of railroad entering the city, and forming unbroken connections with the Atlantic and Pacific coasts and the manufacturing cities of the n. states, are the Chicago St. Louis and New Orleans, the Southern Pacific, the Texas Pacific, the Louisville and Nashville, the Cincinnati New Orleans and Texas Pacific, and the Louisville New Orleans and Texas.

There were (1890) 180 churches in the city, divided denominationally as follows: Bapt. 55; Rom. Cath. 31; Meth. Episc. 27; Presb. 14; Meth. Episc., South, 12; Prot. Episc. 11; Lutheran 11; Evang. Prot. 6; Hebrew 5; Congl. 5; Christian 1; Greek 1; and Unitarian 1. The most noted church edifices after the Rom. Cath. Cathedral are the First Presb. (Greco-Doric), Temple Sinai, Church of the Immaculate Conception (Jesuit, Moorish),

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St. Patrick's (Rom. Cath., Gothic), Trinity and St. Paul's (Prot. Episc., the second Gothic), and McGhee Church (Meth. Episc., South). The Roman Cath. abp. has his palace in the former Ursuline convent, erected 1787.

The educational features of N. O. comprise a public-school system of 54 grammar schools and 3 high schools; numerous private and denominational schools, academies, and colleges; and a univ. system that includes the Tulane Univ. of La., founded by the late Paul Tulane, with academical, legal, and medical departments, the New Orleans Univ., the Southern Univ. (state), Leland Univ., and Straight Univ., exclusively for colored students and with legal department. All these universities have complete faculties, magnificent buildings, substantial endowments, extensive grounds, and large attendance.

The total bonded debt of the city on 1902, July 1, was \$17,286,490, and floating debt \$638,108. The assessed valuation amounted to \$147,201,984, of which \$103,382,415 was real estate and \$43,319,569 personal property, and the tax rate was \$22.00 per \$1,000. There were 6 national banks (cap. \$2,000,000), 7 state banks (cap. \$2,230,000), 3 private banks, and 14 fire insurance companies, with \$6,108,447 assets and \$1,283,960 liabilities. The exchanges at the U. S. clearance house in the year ending Sept. 30, 1902, aggregated \$663,918,045, an increase over that in the preceding year of \$61,651,404.

There are 6 lines of street railroad; 6 large hotels; nearly a dozen noted restaurants; French *cafés* in nearly every block of the old quarter; more than 20 social clubs, of which the Boston, Jockey, Pickwick, Shakespeare, and Social are the most widely known; an electric lighting system more extensive than that of any other American city of its size; a system of public baths on a large scale, introduced in the summer 1890; 52 daily, weekly, and monthly publications; more than 60 asylums, hospitals, and other similar institutions, supported by the city, by various religious denominations, by popular subscription, and by endowment. The defenses are Forts Jackson and St. Philip, 83 m. below the city, Forts Pike, Macomb, and Wood, none of which, however, would be of much use in warfare of the present day.

Historically N. O. dates from 1717, when De la Tour surveyed its site. In the following year a settlement was made under Gov. Bienville, and a levee and rampart built on the river-front. The plat was less than 1 m. sq., the cathedral was erected in the front centre facing the river, and streets were laid out at right angles to each other. The levee proved insufficient to prevent overflows, the settlers suffered severely from storms and marsh-fever, and the attempt to found a city was soon abandoned. In 1723 another settlement was made by the French, who held the place till 1729, when the Spanish gained possession. The first epidemic of yellow fever occurred 1769; the French resumed possession 1801; and the city with the entire province of La. was bought by the U. S.

NEW ORLEANS MOSS - NEW PLATONISTS.

govt. 1803. In 1804 N. O. was incorporated as a city, and 1868-74 was the capital of the state. 1815, Jan. 8, Gen. Andrew Jackson (q.v.) defeated the British in a memorable engagement, and 1862, Apr. 24, Admiral David G. Farragut (q.v.) captured the city from the Confederate forces, and Gen. Benjamin F. Butler (q.v.) was placed in military command. During reconstruction days the city was frequently in turmoil and underarms, rival political parties attacked each other, and U. S. troops were marched into the city to quell the disturbances. Telegraph communication with the city was established 1847; and the work of deepening the South Pass of the river-mouth (see EADS, JAMES BUCHANAN), by which N. O. gained more depth of water than any other port on the gulf, was completed 1879. In 1884-5 a world's industrial and cotton centennial exposition, organized under an act of congress, was held in the City Park, and was visited by nearly 2,000,000 people. Since 1827, the day preceding the first day of Lent, or Ash Wednesday, has been observed as a general and legal holiday; and the Mardi Gras (Fat Tuesday) festival, when Rex holds high carnival in the daytime, and (since 1857) the 'Mystick Krewe of Comus' give their grand tableaux at night, attracts thousands of spectators from all parts of the country and calls every wandering citizen home.

The population varies with the seasons; 25,000 to 30,000 people leave the city during the summer, and probably 50,000 not residents in summer spend their winters there. State and U. S. census reports show pop. (1810) 17,243; (1830) 49,826; (1850) 116,375; (1860) 168,675; (1870) 191,418; 1890) 242,039; (1900) 287,104.

NEW ORLEANS MOSS, OR OLD MAN'S BEARD, OR LONG BEARD: see BROMELIACEÆ.

NEW PHILADELPHIA. city, cap of Tuscarawas co., O.; on Tuscarawas river, and the Lake Shore and Tuscarawas Valley and the Marietta Pittsburg and Cleveland railroads, also a terminus of the Tuscarawas branch of the Cleveland and Pittsburg railroad. It manufactures machinery, lumber, and wool. Pop. (1890) 4,456; (1900) 6,213.

NEW PLATONISTS, see NEO-PLATONISM.

NEWPORT.

NEWPORT, *nū'pōrt*: city, cap. of Campbell co., Ky.; on the s. bank of the Ohio river, which separates it from Cincinnati, at the mouth of the Licking river, which divides it from Covington, and on the Louisville and Nashville, and the Elizabethtown and Big Sandy railroads. A suspension bridge, upon which a street railroad track is laid, spans the Licking river to Covington, and there is a magnificent railroad bridge across the Ohio to Cincinnati, with carriage and foot ways, which has a span 420 ft. in length. Connection with Cincinnati is made by a street railroad passing over the bridge, and by steam ferries. Street cars run also to Dayton and to Covington. There are 20 churches, good schools, one tri-weekly and one weekly newspaper; two national banks, capital \$200,000, and several hotels. The city is lighted with gas, has a fine park, abundant supply of water, organized fire department, and a fire-alarm telegraph. Among fine public buildings are the post office, Masonic Temple, and court-house. The courts are held alternately in N. and in Alexandria. The manufactures include a watch-case factory in which 1,000 hands are employed, extensive steel works, iron-rolling mills, iron pipe foundry, stove works, bolt factory, flour and lumber mills, and tile works. The first settlement at N. was in 1791. Pop. (1870) 15,087; (1880) 20,433; (1890) 24,918; (1900) 28,301.

NEWPORT; city, cap. of Newport co., and formerly one of the capitals of R. I.; lat. 41° 29' n., long. 70° 19' 12" w.; on the w. side of the island of Rhode Island in Narragansett Bay, about 5 m. from the sea, 23 m. s.e. of Providence, with which it is connected by a line of steamers. The Old Colony road furnishes rail communication with Boston, and superb steamers of that company connect it with New York, while the line of the Newport and Wickford Railroad and Steamboat Company connects the city with the roads along the shore. The harbor—one of the best on the Atlantic coast—is large, deep, easy of access; and is defended by Fort Adams, a massive fortification on Brenton's Point, 1½ m. s.w. of the city. On one of the islands in the harbor the national govt. has established a torpedo station; and the Naval War College, a govt. institution, is on Coaster's Harbor Island, near by. There are 20 churches and a Jewish synagogue. The denomination of these churches is as follows: Prot. Episc., 5; Bapt., 4; Meth. Episc. 3; Rom. Cath., 2; Congl., Presb., Unitarian, Friends, and Swedish, 1 each; and there is 1 mission church. The Friends have held annual meetings in N. for two centuries and a half. The Rogers High School, endowed by William Sanford Rogers with \$100,000, is one of the best in the country, and the general school system of the city is excellent. Number of scholars (1901) 3,573. There are numerous private schools. There are 2 libraries with fine collections of books; 5 national. 2 state, and 3 savings banks, and a co-operative institution for building and saving; and 2 weekly, and 2 daily

NEWPORT.

periodicals. One of the newspapers, the *Mercury*, was established 1758 by a nephew of Benjamin Franklin, and is said to be the oldest paper now published in this country. There is a fine park around the famous old stone mill, or Round Tower, concerning the origin and former use of which there are widely differing opinions, but no knowledge except that it is ancient. The fine climate, beautiful scenery, and facilities for ocean bathing have made the city one of the two or three most fashionable places for summer residence in the United States. There are many very expensive and elaborate houses with park-like and beautifully kept grounds. Land for a public park was given, 1886, by Levi P. Morton of New York (afterward vice-pres); and there are other fine public grounds. The water-works are controlled by a private corporation, there is an excellent system of sewerage to the sea; the streets are kept in fine order and are lighted with electricity; a line of street cars is operated by electricity; and there is an organized fire department. The manufactures are not extensive; but there are two cotton-mills, a brass foundry, some lead-works, and the repair shops of the Old Colony Steamboat Company; altogether employing about 150 persons. The first settlement at N. was made 1638 by a few followers of Roger Williams; and the claim, contested by Providence, is made that here was organized the first Bapt. church in the United States. A large foreign commerce was secured at an early date, but was ruined during the revolution, and has never been regained. In that war a large force of British and Hessian troops occupied the town for some time, destroyed hundreds of houses with the orchards and shade trees, and despoiled one of the finest libraries which had been collected in the colonies. The city is noted as the temporary home of Bp. Berkeley (see BERKELEY, GEORGE), and the church in which he preached is still standing. The state house was built 1742; the Redwood library building, a Doric structure, 1750; the city hall 1763. One of the Meth. Episc. churches has the first spire and bell ever placed on a church for that denomination. There is a bronze statue of Com. Matthew C. Perry, and a monument to his brother Com. Oliver H. Perry. The city has long been noted for its charitable institutions and the benefactions of its wealthy citizens. Christopher Townsend established a home for friendless children at the house in which William Ellery Channing was born, and gave it an endowment of \$50,000; gave nearly \$100,000, the income to be used for the benefit of aged people, and established and endowed the public library. Ellen Townsend gives \$7,000 a year toward sustaining the industrial school, Russell Coggeshall gave \$50,000, the income to be used for the deserving poor; and several other persons have left various bequests for similar purposes. The city hospital was endowed by private individuals, and received large bequests from John Alfred Hasard and William Littlefield. The area of the city is about

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eight sq. m., its property is valued at \$700,375, buildings \$243,000, and its sinking fund is \$32,000; assessed valuation \$32,220,650; receipts (1889) \$394,830; expenditures \$385,673.76; public debt, \$208,000. The summer visitors and residents of N. number about 10,000. Permanent pop. (1870) 12,521; (1880) 15,693; (1885) 20,339. (1890) 19,457; (1900) 22,034.

NEWPORT: thriving market-town, parliamentary and municipal borough, and river-port of England, county of Monmouth, on the Usk, about 4 m. from its mouth, 24 m. s.s.w. of the town of Monmouth. It was anciently the port of the city of Caerleon, about three m. further up the river; but during the 19th c. it has become a shipping port of considerable importance, its situation on a deep and spacious tidal river making it the outlet for the produce of the extensive collieries, and of the growing iron and tin works of the neighborhood. It possesses a number of recently-erected public buildings, has spacious docks, manufactures nails and spikes extensively, exports iron and coal largely, and carries on an excellent general trade. In 1880, entered the port 9,899 vessels, of 1,581,959 tons; cleared, 9,946, of 1,576,275 tons. There is regular steam communication with Liverpool, Bristol, and Ireland. The town stands amid picturesque scenery, but in its central parts is meanly built. A curious old parish church is that of St. Woollos. The remains of N. Castle are now in part used as a brewery. Pop. (1801) 1,135; (1831) 7,062; (1851) 20,279; (1871) 27,069; (1881) 35,382; (1891) 54,695; (1901) 67,290.

NEWPORT: municipal borough and river-port of England, in Hampshire; chief town of the Isle of Wight; near the centre of that island, on the Medina, which is navigable up to this point. St. Thomas's Church, rebuilt 1854, on the site of an ancient structure of the reign of Henry III., is a handsome edifice, and contains a monument erected by Queen Victoria in memory of Princess Elizabeth, daughter of Charles I., who died at Carisbrooke Castle, 1650. Among the educational establishments is the Free Grammar School, in which frequent meetings and negotiations between Charles I. and the Parliamentary Commissioners took place. About a mile north of N. is Carisbrooke Castle, where the king was confined under the guardianship of Col. Hammond for twelve months (1647-8). There are several important institutions in the vicinity, e.g., the Albany Barracks, the House of Industry, and the Parkhurst Prison for juvenile convicts. There is some lace manufacture. Vessels of considerable tonnage can ascend to the quay at high tides. Pop. (1871) 7,956; (1881) 9,430; (1891) 10,216.

NEWPORT—NEW RED SANDSTONE.

NEWPORT, CHRISTOPHER: born England, about 1565. He commanded expeditions to the W. Indies; and 1606, Dec. 19, sailed from London in command of three ships which brought the first English colonists who made a permanent settlement at Jamestown, Va., where they settled 1607, May 13. He soon returned to England, and the next season brought more emigrants and needed supplies. He loaded his ships with yellow mica, which he supposed to be gold, and took it to England. He made trips to Va., 1608, 10, in the latter bringing Lord Delaware and a new colonial charter. He wrote *Discoveries in America*.

NEWPORT NEWS: former cap. of Warwick co., Va., now an independent city; on the Ches. and O. railroad, 70 m. s.e. of Richmond, 14 m. n. of Norfolk. Its harbor is considered one of the best in the world; it has large grain-elevators and capacious wharves, and is connected with Old Point Comfort and Hampton by electric railway, has a line of freight steamers direct to England, and an extensive ship-building plant. N. N. is said to be the fourth largest grain-shipping port in the United States. Pop. (1890) 4,449; (1900) 19,635.

NEW PROVIDENCE, *nū prōv'ĩ-děns*: island; one of the Bahamas; principal island of the group; lat. 25° 5' n. and long. 77° 21' w.; about 17 m. in length, 7 m. in breadth, and has a good harbor. The surface is but slightly varied, and there are numerous lagoons of large size. Considerable fruit is grown, including oranges, bananas and pine-apples. Sponge fishing is carried on to some extent. The principal town is Nassau, cap. of the Bahamas, near the n. coast. It is a noted winter health resort for people of the northern United States. The first settlement at N. P. was made by the English 1629. The island has been twice under the dominion of Spain, but was returned to Great Britain by the treaty of 1783. Pop. (1901) 12,534.

NEW RED SANDSTONE: former term for a large series of reddish colored loams, shales, and sandstones, occurring between the Carboniferous Rocks and the Lias; grouped together under this name, in distinction from the Old Red Sandstone group, which lies below the Coal-measures, and has a similar mineral structure. Conybeare and Buckland proposed the title Poikilitic [Gr. variegated] for the same strata, because some of the most characteristic beds are variegated with spots and streaks of light-blue, green; and buff, on a red base. In the progress of geology, however, it was found that two distinct periods were included under these names; and the contained fossils of each group were found so remarkably different that one period was referred to the Paleozoic series under the name Permian (q.v.), while the other, known as the Trias (q.v.), was assigned to the Secondary series.

NEW RICHMOND—NEWRY.

NEW RICHMOND, *nū rīch'mond*: village in Clermont co., O. It is on the Ohio and Northwestern railroad and the Ohio river, 20 m. s.e. of Cincinnati. It has 8 churches, town hall, weekly newspaper, and national bank. The industrial establishments include a tobacco factory, distillery, brewery, a furniture shop, saw-mills and grist-mills, a woolen factory, chair factory, and brick-yards. It is in an agricultural region. Pop. (1870) 2,516; (1880) 2,545; (1890) 2,379; (1900) 1,916.

NEW ROCHELLE, *nū rō-shēl'*: village Westchester co., N. Y.; on a beautiful inlet from Long Island Sound called N. R. harbor, and on the New York, New Haven and Hartford railroad, 20 m. n.e. of New York city hall. There are 7 churches, good schools, 3 weekly newspapers, and a state bank. On a bluff, one mile from the village, and overlooking the harbor, there is a large hotel. Several of the mansions erected in colonial times remain and attest the ample means and thorough workmanship of the early settlers. There are a number of beautiful islets in the harbor, and both land and water views from the shore are very fine. There is a good local trade. The village is a favorite place of summer and permanent residence for New York business men, and parts of its territory have recently been laid out for that purpose with beautiful landscape gardening. Pop. (1870) 3,915; (1880) 5,276; (1890) 9,057; (1900) 14,720.

NEW ROSS, *nū rōs*: market-town and seaport of Leinster, Ireland, on the estuary of the Barrow, partly in the county of Kilkenny, but chiefly in the county of Wexford; 84 m. s. s. w. from Dublin. It is an ancient town, having been surrounded by walls about the middle of the 13th c. It is now a place of considerable commerce, and the modern part of the town on the Wexford side is built with regularity and taste. On the Kilkenny side is a straggling suburb called Rosbercon, connected with N. R. by a metal bridge, erected at a cost of £50,137, which has a swivel-pillar in the centre, to allow vessels to pass. The port is approachable at spring-tides by ships of 800 tons, and at all times by vessels of 600 tons; and there is communication by river and canal with Dublin, and with Limerick. Pop. in 1871, 6,772; (1881) 6,626; (1891) 5,847.

NEW RUSSIA: see **RUSSIA**.

NEWRY, *nū'rī*: seaport and parliamentary borough, partly in the county of Armagh, principally in the county of Down, Ireland, 63 m. n. of Dublin, 38 m. s.s. w. of Belfast, and connected with both places by a branch-railway communicating with the Dublin and Belfast Junction railway. The town is nearly coeval with the English invasion, having grown up around a monastery founded 1183, and a castle subsequently erected by De Courcey. This castle was the scene of several struggles: and in most of the civil wars of Ulster, N. suffered severely. It is traversed by the river N., which falls into Carlingford Lough,

NEWS—NEW SIBERIA.

also by a canal which prolongs the navigation to Lough Neagh, 32 m. A commission for improving Carlingford Lough, has already spent £80,000 upon it. The town is handsomely and compactly built. The quays are lined with spacious warehouses, and there are several mills, tanyards, coach and car manufactories, and iron-foundries. Extensive water-works have recently been constructed. There are linen, cotton, and iron manufactures. The income of the port is £6,000 yearly. Steam-vessels ply to Liverpool and Glasgow from Warrenpoint, a port five m. distant, on Carlingford Lough; and the N. and Greenore railway connects the N. and Armagh line with Carlingford Lough. Pop. (1871) 14,158; (1881) 15,085; (1891) 12,961.

NEWS, *n.* sing, *nŭz* [from Eng. *new*: F. *nouvelles*, new things, news]: recent intelligence; tidings. NEWS-BOY, or NEWS-MAN, one who sells or delivers newspapers. NEWS-GALLEYS, among *printers*, long frames of metal, or of metal bottoms and wooden sides, for containing columns of type, for the purpose of pulling therefrom proofs in slips. NEWSMONGER, one who employs much of his time in hearing and telling news. NEWS-VENDER, a seller of newspapers. NEWSPAPER, *n.* a sheet of paper printed and published daily, or at intervals, for giving intelligence of passing events (see below). NEWSPAPER AGENT, one who supplies newspapers to the public; a news-vender. NEWS-ROOM, a room where the daily papers, magazines, reviews, etc., may be read by subscribers. NEWS-WRITER, a casual reporter or contributor to a newspaper. *Note.*—In OE., *news* was employed indifferently either in a singular or plural construction. Modern usage limits it to a singular construction only.—SYN. of 'news': tidings; information; intelligence; advice.

NEW SCHOOL PRESBYTERIANS: one of the two parties in the Presb. Chh. in the United States which, long traceable as diverse drifts of opinion and practice, led to the division of the church 1838. The two sects, New School and Old School, reunited 1870. See PRESBYTERIAN CHURCH IN THE United States.

NEW SHOREHAM: see SHOREHAM.

NEW SIBERIA, *nŭsĭ-bĕrĭ-a*: group of islands in the Arctic Ocean, n.n.e. of the mouth of the river Lena, in E. Siberia: lat. 73° 20'—76° 12' n., long. 135° 20'—150° 20' e.; 20,480 sq. m. The principal are Kotelnoi (the largest), Liakov, Fadievskoi, and New Siberia. The coasts are in general rocky, and are covered all the year round with snow. The islands are very important, for the immense multitude of bones and teeth of mammoths, rhinoceroses, buffaloes, etc., found in the soil. They are now uninhabited, but there are traces of former human habitation. Neither bush nor tree is to be seen anywhere.

NEW SOUTH WALES.

NEW SOUTH WALES, *wālz*: an 'original State' of Australia. Its name, given by Capt. Cook, was from some fancied resemblance of its coast-line to the s. coast of Wales. It originally comprised all the Australian settlements e. of the 135th meridian, but the formation, successively, of the separate colonies of South Australia (1836), Victoria (1851), and Queensland (1859), has reduced its dimensions. It is now bounded n. by a line which, beginning at Point Danger, lat. $28^{\circ} 8' \text{ s.}$, follows several lines of heights across the Dividing Range till it meets the 29th parallel, which forms the rest of the boundary westward; w. by the 141st meridian; e. by the Pacific Ocean; and the line separating it from Victoria on the s. runs from Cape Howe, at the s.e. of the island, n.w. to the source of the Murray river, and along that stream, w. by n. to the w. boundary of the two colonies. Greatest length 900 m. greatest breadth 850 m.; 310,700 sq. m., somewhat more than $2\frac{1}{2}$ times that of Great Britain and Ireland, and more than that of any state in Europe except Russia. For the more general physical character of the country, see AUSTRALIA. Within the State of N. S. W. the mountain-range, which girdles nearly the whole island, is most continuous and elevated, and is known as the Dividing Range. The section of this mountain system on the s. boundary of the State, called the Australian Alps, rises in Mount Kosciusko to 7,308 ft. From this range extends n., the water-shed, being 30 to 120 m. from the e. coast, and thus divides the colony into two slopes, with two distinct water-systems. The rivers on the e. side descend with great rapidity, and in oblique tortuous courses, their channels often forming deep ravines. Many of them are navigable in their lower course for sea-going steamers. The principal are the Richmond, Clarence, M'Leay, Manning, Hunter, Hawkesbury, and Shoalhaven. The Hunter river, about 60 m.n. of Sydney, opens one of the most fertile and delightful districts in the country. The Dividing Range, which, opposite to Sydney, is called the Blue Mountains, being singularly abrupt and rugged, and full of frightful chasms, long presented an impenetrable barrier to the w., and kept the colonists shut in between it and the sea, ignorant of what lay beyond. At last, 1813, when the cattle were likely to perish in one of those long droughts that seem to visit this country at intervals of a dozen years, three adventurous individuals scaled the formidable barrier, and discovered those downs on the w. slope which now form the great sheep-ranges of Australia. A practicable line of road was immediately constructed by convict labor, and the tide of occupation entered on the new and limitless expanse. The numerous streams that rise on the w. side of the water-shed within the State, all converge and empty their waters into the sea through one channel within the State of S. Australia. The s. and main branch of this great river-system is the Murray. The other great trunks of the system are the Murrumbidgee, Macintyre, Darling, and Campaspe.

NEW SOUTH WALES.

of assembly elected on the basis of manhood suffrage by permanent residents. The colony maintained in London its own agent-general, who communicated directly with the colonial office. As regards religion, all sects are on a footing of equality. In 1902 clergy and ministers numbered 1,217, church members 1,354,859 (not including aborigines), of whom the Church of England had 381 clergy, 623,131 members; Presb. 178 clergy, 132,617 members; Wesleyans 199 clergy, 137,638 members; Rom. Cath. 311 clergy, 347,286 members. The number of schools under the dept. of public instruction (1901) was 2,818; besides these there were 889 private schools; there were in all more than 302,000 pupils. For the higher education, see SYDNEY. The cap. is Sydney (q.v.), a splendid city, oldest and most important in all Australasia, pop. (1901) 496,990; other chief towns are Parramatta, Bathurst, Goulburn. Maitland, New castle, Grafton, Wollongong and Armidale, with populations from 3,000 to 17,000.

N. S. W. took its origin in a penal establishment, formed by the British government, 1788, at Port Jackson, near Botany Bay (latitude 34°). The prisoners, after their period of servitude, or on being pardoned, became settlers, and obtained grants of land. Transportation to N. S. W. ceased 1840, at which date the total number of convicts sent thither amounted to 60,700, of whom 8,700 were women. In 1833 there were 23,000 free males and 13,500 free females, to 22,000 male and 2,700 female convicts; and of the free population, above 16,000 were emancipists.

In 1870-80, N. S. W. adopted free-trade principles, a departure from the usages of all the other Australasian colonies, which its people consider justified by the development of commerce and manufacturing industry. In 1881 there were 13,857 persons, of whom 2,096 were females, employed in miscellaneous industries, wages ruling somewhat higher than in England.

In 1894 there were 42,751 persons employed and £15,649,704, or about \$78,245,000, invested in various manufacturing enterprises.

Pop.	Males.	Females.	Total.
1850.	154,575	110,923	265,503
1861.	202,099	156,179	358,278
1871.	275,551	228,430	503,981
1881.	411,149	340,419	751,468
1891.	612,562	519,672	1,132,234
1901.	712,456	646,677	1,359,133

In 1891, Mar. 2, the national Australian convention, empowered to consider and report on an adequate scheme for a federal constitution under which Australian colonies might unite, met at Sydney. In 1895, Nov., a federal enabling act was passed by legislative assembly of N. S. W.; and on 1901, Jan. 1, the new commonwealth of Australia was proc'aimed in Sydney, N. S. W., becoming one of the 'original States.'

NEWSPAPER.

NEWS-PAPER : periodical publication printed and distributed for circulation of news. From the broadsheet relating the most meagre intelligence without comment or inference, the N. has grown into a powerful political and social engine, diffusing information on all subjects of interest, circulating advertisements, and acting on the public mind, in times of excitement, to an extent that has led it to be called in England the fourth estate of the realm, and that in the United States has caused it to imply, if not to assert, for itself a still higher place.

The earliest approach to the N. is found in the *Acta Diurna*, or *Acta Publica*, of ancient Rome, an official gazette, which in the later times of the republic, and during the empire, appeared daily under sanction of the government. The contents of these *Acta* consisted of an enumeration of the births and deaths in Rome, an account of the money paid into the treasury, and everything relating to the supply of corn; extracts from the *Acta Forensica*, including the edicts of magistrates, the testaments of distinguished men, reports of trials, with the names of the acquitted and condemned, a list of the magistrates who were elected; extracts from the *Acta Senatus*, an account of public affairs and foreign wars, of the births, deaths, festivals, and movements of the imperial family; and, generally, news relating to public buildings, funerals, games, fires, sacrifices, and miracles, as well as amatory stories. The *Acta* seem to have been drawn up under the superintendence of censors, questors, and other magistrates, by officers called *actuarii*, assisted by clerks and notaries; and their publication consisted in posting them in some public place in the city, where they could be read by any one who pleased. They continued to be issued until the downfall of the Western Empire, but there seems never to have been anything corresponding to them at Constantinople.

The beginnings of the N. of modern Europe and America are traceable to Germany and to Venice. Soon after the invention of printing, in the latter half of the 15th c., small news-sheets, called *Relationen* and the *Neue Zeytung*, appeared in Augsburg, Vienna, Ratisbon, and Nürnberg, generally in the form of a letter. The extant numbers contain, among other matters, accounts of the discovery of America, of the conquests of the Turks, of the French and Austrian war in Italy, with such local occurrences as executions, inundations, earthquakes, burnings of witches, and child-murders committed by the Jews. More important, perhaps, were the official *Notizie Scritte*, first issued by the Venetian govt. in the 16th c., containing accounts of the wars carried on by the republic and other events of general interest. At first they were not printed, but were to be seen in various public places on payment of a small coin, called a *Gazeta*, whence the name 'Gazette.' After they were allowed by the govt. to be printed, they obtained wide circulation over the whole of Europe.

The earliest English newspapers, or news-letters, be-

long to the reign of James I., and were printed in the form of small quarto pamphlets. Some copies of a sheet, called the *English Mercury*, purporting to be published by authority of Queen Elizabeth 1588, the period of the Spanish Armada, have been proved by Mr. Watts of the British Museum to be literary forgeries, executed about 1766. The first English newspapers appeared at occasional and irregular intervals: the earliest, so far as ascertained, is entitled *News out of Holland*, and was published for M. Newbery 1619. In 1622 these occasional pamphlets were converted into the first printed N., entitled *The Certaine News of the Present Week*, edited by Nathaniel Butter. About the same time appeared the *London Weekly Courant*. A large number of publications, hardly deserving the name of newspapers, were circulated during the civil war in England, with such names as *England's Memorable Accidents*, *The Kingdom's Intelligencer*, *Mercurius Aulicus*, *The Scots Intelligencer*, *The Parliament's Scout*, *The Parliament's Scout's Discovery*, or *Certain Information*, *The Scots Dove*, *The Parliament Kite*, *The Secret Owl*, *Mercurius Mastix*, *Mercurius Democritus*, *Mercurius Acheronticus*, or *News from Hell*, etc. The arrangement of the news is poor in the extreme, and what few comments there are, are examples of utmost virulence. The Long Parliament subjected the N. press to a censorship, which became more strict under Charles II. The first English N. which could properly be considered a vehicle of general information was the *Public Intelligencer*, established by Sir Roger L'Estrange 1663; it was dropped on the appearance of *The London Gazette*, the first number of which was published 1665, Nov. 7, at Oxford, where the court was residing in consequence of the plague being then in London. A second paper, *The Observer*, was afterward started by L'Estrange, who, 1680, exercised his authority as licenser of the press by issuing a proclamation 'for suppressing the printing and publishing of unlicensed news-books and pamphlets of news.' Small as was the sheet, a difficulty often arose how to fill it. One publisher was in the way of supplying the dearth of news by a passage from the Bible; another announced that 'blank space is left that any gentleman may write his own private business.'

Until the reign of Queen Anne, few of the newspapers appeared oftener than once a week. From the interest excited by Marlborough's victories arose a demand for more frequent intelligence, and besides 17 newspapers published three times a week, the *Daily Courant*, established 1709, was issued every day except Sunday. Of the more noted London newspapers, the *London Daily Post and General Advertiser* was established 1726, and in 1752 became the *Public Advertiser*; a celebrity attaches to it from having been the medium in which 'Junius's Letters' first appeared. The *St. James's Chronicle* arose from an amalgamation of two papers, the *St. James's Post* and *St. James's Evening Post*, both which began 1715. The *North Briton*, edited by Wilkes, appeared first 1762.

The *Morning Chronicle*, discontinued 1862, dates from 1770; the *Morning Post*, from 1772; the now defunct *Morning Herald*, from 1781; the *Times* appeared first 1788, as a continuation of the *London Daily Universal Register*, established three years earlier.

During the reign of George III. prosecutions were rife against N. writers and editors; their result, generally, was to give greatly increased currency to the doctrines assailed, and to confer a fictitious importance on the traders in politics, by whom many of the journals were conducted. The first attempt at parliamentary reporting was resented by the house of commons as a breach of privilege, but the resolutions and the imprisonments of 1771 all ended in the tacit concession of publicity of discussion which has ever since prevailed.

The newspapers of Great Britain have, within the present c., greatly increased in size and improved in literary character. In both respects the English claim that they are far in advance of the journals of any other country. Each number of the *Times* now consists in general of 16 pages, occasionally 24, and contains more than 5,000 advertisements. The success of the *Times* is due mainly to the enterprise of its original promoter, John Walter (q.v.) (1739–1812), who first introduced various improvements in the art of printing, and made a strong effort to secure the best literary talent attainable in all departments of his journal. One of the most notable incidents in the history of the *Times* was the exposure, through means of its Paris correspondent, of a gigantic scheme of forgery planned in France 1840—a scheme which contemplated the almost simultaneous presentation, at the chief banking-houses of the continent, of forged letters of credit from Glyn and Co. The failure of the conspiracy was due mainly to the exertions of the *Times*. One of the parties implicated brought an action for libel against the printer, and obtained a verdict of one farthing damages. A public subscription was raised to defray the expenses incurred in defending the action, when the proprietors of the *Times*, declining personally to accept the sum subscribed, invested it in two *Times* scholarships in connection with Christ's Hospital and the City of London School, for the benefit of pupils proceeding thence to Oxford or Cambridge.

Somewhat in contrast with the above report of the success of the London *Times* in discovering a forgery of importance, it is proper to adduce an incident in recent history in which the London *Times* was the victim of a series of forgeries. During the latter part of 1888 and the beginning of 1889 was tried before a parliamentary commission the case of 'O'Donnell *versus* Walter and another,' which was, in fact, that of Charles Stuart Parnell against the London *Times*, for libel in connection with the publication of a series of articles entitled 'Parnellism and Crime,' in which an effort was made to show a connection between Mr. Parnell and the Phoenix Park murders, and generally with the dynamite and other out-

rages charged against agents of the Irish nationalist party. During this trial, there was brought into court, in evidence, a series of seven letters alleged to have been written by Mr. Parnell, and which, taken as they stood, were of an inculpatory character. Four of these letters were dated 1882: three were without date. They all were brief, and in a handwriting which certainly greatly resembled that of Mr. Parnell. These letters had been obtained by the editor of the *Times* from Mr. Edward C. Houston, who had received from the *Times* sums of money amounting in all to nearly £3,000, but of which sum, as was sworn, no particular amount was given for the inculpatory letters. These letters were obtained—from some source not given, according to the sworn statement—by one Richard Pigott, ex-Fenian and formerly part proprietor of the *Irishman*. Pigott was examined before the Parnell commission, and held to his original statement; but 1889, Feb., he made a written confession before Henry Labouchere, M.P., and George A. Sala, in which he stated that he had himself fabricated and forged the alleged Parnell letters, using genuine letters of Mr. Parnell in this fabrication. Pigott fled from England to Madrid, closely followed by Scotland Yard detectives, whom, however, he escaped by committing suicide at a hotel in Madrid, just at the time when a legal officer was in the hotel for the purpose of effecting his arrest. The Pigott confession practically completed the break-down of the case of the *Times*; and, so far as the forged letters were concerned, that paper published a complete acknowledgement of its error, and expressed willingness to submit to such damages as might be imposed upon it. As a fact, these disclosures destroyed the entire validity of the case before the Parnell commission, which brought in a report practically exculpating Mr. Parnell from the grave charges which the *Times* had made.

A stamp-duty on newspapers was imposed 1713 by 10 Anne, amounting to one half-penny on 'half a sheet or less,' and one penny 'if larger than half a sheet, and not exceeding a whole sheet.' The duty was raised by successive statutes, but was abolished 1855—a change which occasioned immense increase in the number of newspapers, and diminution of their price, though many of the cheap papers then started were of very brief duration. The repeal of the paper-duty, 1861, added to the number and cheapness of newspapers. The number of stamps issued on British newspapers was (1753) 7,500,000; (1800) 16,000,000; (1850) 65,741,271.

In 1843 the number of newspapers published in London was 79; (1880) about 340, of which 18 were daily and 5 evening (one of the 5 a mere reprint of the morning paper, with what news had been received during the day). Of these, the most influential since the last half of the 19th c. began has been the *Times*, established 1788, of which nearly 70,000 copies are printed daily, and a larger circulation on occasions of public interest. It professes in-

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dependence in politics, though at present (1890) and in recent years its conservative interest and tone have been decided. The *Daily News*, *Pall Mall Gazette* (evening paper), *Daily Telegraph*, and *Morning Post* (organ of the *beau-monde*) are the most important liberal daily papers; the *St. James's Gazette* calls itself anti-radical; while the *Standard* and *Globe* (evening paper) are conservative.

The price of the daily London papers varies from $\frac{1}{2}d.$ to $3d.$ (from one cent to six cents). Of the 1,648 newspapers not daily, most are published once, some twice, some three times, one four times a week, some once a fortnight, and some monthly. They comprise agricultural, sporting, commercial, and railway journals; about a dozen purely literary, or literary and scientific; military and naval, musical and theatrical, legal and medical journals. There are a *Court Circular* and a *Court Journal*, a French, a German, an Anglo-American, and a Spanish weekly paper. There are a few pictorial and about half-a-dozen humorous papers. Of these last, *Punch*, which has been in existence since 1841, is ably conducted and wields much influence. A large number are the organs of particular religious sects or parties. The bakers, drapers, grocers, printers, booksellers, brewers, etc., have their respective journals; the builders have six; and there are many newspapers with a purely local circulation. The *World*, *Truth*, and *The Lady's Pictorial*, etc., are so-called 'society-papers.' The price of the weekly papers varies from $6d.$ to $1d.$ or $\frac{1}{2}d.$ (from 12 cents to one cent).

The earliest English provincial N. is believed to be the *Norwich Postman*, published 1706, at the price of a penny, but 'a half-penny not refused.' It was followed 1714 by the *Norwich Courant, or Weekly Packet*. A *York Courant*, *Leeds Courant*, and *York Journal* were established about 1720, the *Manchester Gazette* 1730, and the *Oxford Journal* 1740. In 1843 were published in provincial towns of England 212 newspapers, and in Wales 8. The provincial newspapers of England numbered (1880) more than 1,000, besides 60 belonging to Wales and 20 to the Islands. About a fifth of the number profess conservative or liberal-conservative principles, half of them liberal, a small number perfect independence in politics, and the rest are avowedly neutral. Only a very few of these are conducted with any ability. Among the more important are the *Manchester Examiner*, understood to have a circulation of 35,000, the *Newcastle Chronicle*, of 36,000, and the *Manchester Guardian*. A characteristic feature of many second-class provincial papers is a column of gossip or scandal, entitled a letter 'From Our London Correspondent.'

The N. press of Scotland began during the civil wars of the 17th c. A party of Cromwell's troops, who arrived at Leith 1652, to garrison the citadel, brought with them a printer named Christopher Higgins, to reprint the London paper, *Mercurius Politicus*. The first number was issued 1653, Oct. 26; and 1654, Nov., the establishment was transferred to Edinburgh, where the reprinting went on

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till 1660. 1660, Dec. 31, the first number was published of the *Mercurius Caledonius*, which proposed to furnish information regarding the 'affairs in agitation in Scotland, with a survey of foreign intelligence.' It lived only three months, and was succeeded by *The Kingdom's Intelligencer*. The *Edinburgh Gazette*, official paper published by authority, was established 1669 by James Watson, a printer of eminence and skill. In 1702 Watson started also the *Edinburgh Courant*, which attained its 215th number, and 1706 the *Scots Courant*. In 1718 the town-council of Edinburgh gave a privilege to James M'Laren to print the *Edinburgh Evening Courant* three times a week, on condition that before publication he should give 'ane coppie of his print to the magistrates.' It ceased to exist as a separate newspaper 1886, being incorporated with the *Scottish News*, principal conservative journal in Scotland. The *Caledonian Mercury*, now defunct, was published first 1720. The *Scotsman*, which came into existence 1817, under the conduct of Charles Maclaren, and was for a short time edited by J. R. McCulloch, political economist, is the most influential liberal journal in Scotland, and is believed to have a circulation of 60,000. The earliest Scottish provincial newspaper was the *Glasgow Courant*, established 1715; the *Glasgow Herald*, next in importance to the *Scotsman*, was established 1782. The *Aberdeen Journal* was founded 1746 by James Chalmers; the first number contained an account of the battle of Culloden. The number of newspapers published in Scotland 1843 was 69; (1890) about 180. A few of the leading journals of Scotland contain articles little inferior in talent to those of the best English newspapers, and exercise considerable political influence. About 20 of the Scottish papers are regarded as conservative, 60-70 liberal, and the rest either independent or neutral in politics. Edinburgh has in all 11 newspapers, including the weekly issue of one of the three dailies; Glasgow 19 (with 6 dailies); Aberdeen 5; Dundee 5; Paisley 5. The price of most of the daily papers is 1*d.* (2 cents); of some it is ½*d.* (1 cent); that of the weeklies and bi-weeklies varies from ½*d.* to 4*d.* (from one cent to eight cents).

In Ireland, a news-sheet, called *Warranted Tidings from Ireland*, was printed during the rebellion of 1641; but the first Irish N., properly so called, was the *Dublin News-Letter*, commenced 1685. *Puc's Occurrences*, a Dublin daily paper originated 1700, continued half a century. It was followed 1728 by another daily, *Faulkner's Journal*, established by George Faulkner, 'a man celebrated for the goodness of his heart and the weakness of his head.' The oldest Dublin N. was *Saunders's News-Letter*, begun 1746, now stopped; the *Evening Post* was instituted 1725. The *Limerick Chronicle*, oldest Irish provincial paper, dates from 1766. Ireland possessed (1843) 79 newspapers; (1880) about 140. One or two of the 'national' journals verge, at times, on treason; and most of the Irish papers are characterized by an energy of language and a strength

or political bias unknown in other parts of the United Kingdom. The *Irish Times* and the *Evening Mail*, published in Dublin, and the *Belfast News-Letter*, are influential daily papers.

The Isle of Man supports 1 conservative, 2 liberal, and 1 neutral journals. Jersey has 9 journals, 4 in French and 5 in English; 4 are liberal, 1 conservative, 2 liberal-conservative, 1 independent, and 1 neutral. Guernsey has an official gazette in French, which is Protestant and neutral; besides 2 liberal, 1 liberal-conservative, and 2 neutral papers. These local papers are conducted with great spirit and success.

In the British colonies, newspapers are numerous, including those in India printed in the Bengalee and other native languages. *Hieking's Gazette*, the first Anglo-Indian N., appeared at Calcutta 1781; followed 1784 by a small official sheet, the *Calcutta Gazette, or Oriental Advertiser*. The still surviving *Bengal Hurkuru* was established 1795. In the earlier times of Indian newspapers, though there was no direct censorship, exemplary punishment was often inflicted on the authors of offensive paragraphs. In 1794 Mr. Ducane, editor of the *World*, was transported to Europe for an inflammatory address to the army which appeared in his paper; and a similar result followed 1798 to another editor, who made severe observations on the official conduct of a local magistrate. A censorship established by Lord Wellesley 1799 was abolished by the Marquis of Hastings 1818; but a license, revocable at pleasure, was required to be taken out by every printer of a N. In 1832 the Indian press consisted of 6 European and 5 native journals. The licensing system was done away with by Lord Metcalfe's law, 1835, a step disapproved of by the E. India directors, but was reverted to on the occurrence of the mutiny, 1857. In 1878 an Indian press law tantamount to a censorship was enacted, applicable to the vernacular press only. In 1875 there were in India 135 Eng., 270 vernacular, and 55 mixed newspapers.—The first Australian paper was the *Sydney Gazette*, founded 1803. Hobart Town had its journal 1804, and newspapers began to multiply in the Australian colonies 1824. The principal are now the *Sydney Herald*, the *Sydney Mail*, the *Argus* of Melbourne, and the *South Australian Register*. The materials for printing this last-named paper were carried out by the original s. Australian colonists, the first number having been previously printed in England. A similar course was adopted by the first New Zealand colony, 1839, in founding their *New Zealand Gazette* and *New Zealand Advertiser*. Tahiti has, since 1844, had its *L'Océanie Française*. There is also the *Fiji Times*, the *Fiji Gazette*, and the *Central Poly-nesian*.

France.—The earliest French N. is said to have been established by Théophraste Renaudot, physician, in the beginning of the 17th c. The first number of his *Gazette* appeared 1631. In the following year, through interest of Cardinal Richelieu, he obtained a royal privilege for

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his *Gazette*; it was continued weekly till 1762, and then began to appear twice in the week, and to combine advertisements with public news. Commercial intelligence was added 1765, theatrical announcements 1792. In 1650 was started the *Gazette Burlesque*, a journal in verse, edited by the poet Jean Loret, devoted largely to the *chronique scandaleuse* of Paris; and 1672 the *Mercure Galant*, political and literary journal, which afterward became the *Mercure de France*, and was continued during the Revolution and till 1815. The first French daily N. was the *Journal de Paris*, which began 1777, and was discontinued 1819. A large crop of journals sprang into being with the Revolution, organs respectively of republicans, Jacobins, and royalists; but most of them had a very brief existence. Under the first Napoleon the freedom of the press was much restricted. By one of his earliest ordinances as first consul, all the newspapers except 13 were suppressed, and under the empire the tolerated journals were restricted to be little more than echoes of the official *Moniteur*. From the danger which attended the handling of political questions arose the practice of filling a large portion of the sheet with the 'Feuilleton,' consisting of a sketch or tale by a popular writer, ever since a characteristic of French journalism. During the restoration period, the press being again less fettered, there was large increase in the number of newspapers. In 1826 there were 127, and 1829 there were 307, newspapers in Paris. The July revolution at first added to their number; but the restrictive measures of 1834, consisting in the imposition of a stamp-duty and of an obligation to find security to the amount of 24,000 francs (about \$4,632), led to the collapse of a large proportion of the journals. The *Moniteur*, *Débats*, and *Presse* were in the possession of the govt., and for a time also the *Constitutionnel*; and every shade of political opinion had its recognized organ. Emile de Girardin's scheme of widening the circulation of the govt. organ, the *Presse*, by bringing down the subscription price from 80 francs (\$15.44) to 40 francs (\$7.72), had the result of reducing the price of the opposition journals also. Cheap newspapers being thus established, it soon appeared that, with the class among whom they circulated most widely, the feuilleton was prized more than the political article; thus it became the policy of the journalists to pay great sums to the cleverest novelists of the day, in order to retain them in their service. 100,000 francs (about \$19,300) paid by Dr. Véron of the *Constitutionnel* to Eugène Sue, for his *Juif Errant*, turned out as profitable a speculation for the journalist as for the novelist.

The revolution of 1848, like the revolutions that had gone before it, gave birth to a multitude of short-lived journals. 89 different political journals started into ephemeral existence in Paris during the Commune, 1871, Mar. 19—May 27. When Emperor Napoleon III. was pres. of the republic, a law was passed requiring the author of every N. article to affix his name to it. 1852,

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Feb., the press laws were incorporated, with increased stringency, into a *Décret organique sur la Presse*. Louis Napoleon, during the empire, relaxed the stringency a little. The republic holds newspapers in as great bondage as did its imperial predecessor. Among the most important daily papers in Paris are the *R publique Française*, *Pays*, *Siècle*, *Presse*, *D bats*, *Bien Public*, *France*, *Journal Officiel*, *Temps*, *L'Univers*, *Charivari*, and *Figaro*.

Belgium.—In the Low Countries an illustrated war gazette, the *Nieuwtijdinghe*, was published first 1605—the precursor of the *Gazette van Antwerpen*, which continued till 1805. During the Spanish and Austrian rule, each town had its privileged N., but the press was considerably fettered in expression of political opinion. Under the French rule, most of these journals disappeared or sank into insignificance. The *Annales Politiques* was a political journal of considerable popularity during the 18th c. Since the revolution of 1830, the press has been subject to few restraints, the newspapers have been numerous, and a few well conducted. The *Ind pendance Belge* has a large circulation and considerable political influence. It is the property of a company of bankers, and is conducted by a Frenchman of talent and liberal sentiments. The *Moniteur Belge* was instituted as the official organ of the ministry 1830. *Le Nord*, a Russian organ published in Brussels, is conducted with great ability. A large circulation is enjoyed by the *Journal de Bruxelles*, the *Emancipation*, and the *Étoile Belge*—papers all in the interest of the *parti prêtre*, and supplied with correspondence from Rome. The *Echo de Bruxelles* and the *Journal de Belgique* are independent papers. The *Précurseur d'Anvers* and the *Escaut* of Antwerp have a good circulation—the latter is at once ultramontane and ultra-democratic.

Holland.—The earlier newspapers of Holland were in some respects, particularly in accuracy of information, in advance of those of other countries, but gave far more prominence to commercial than to political intelligence. They all bore the name of *Courant* appended to the name of the town where they were published. Though subject to no censorship since 1815, it was not till 1830 that they began to comment on political occurrences. At present the principal Dutch journals are the *Allgemeene Handelsblad* of Amsterdam and *Amsterdam Courant*; the *Haarlemsche Courant*; and the *Journal de la Haye*, *De Nederlandsche Stoompost*, and *Staats Courant*—published at the Hague.

Switzerland.—Switzerland being a confederation of states, each with its own institutions, the Swiss newspapers have a very local character; but they are numerous, and some have of late years greatly improved in character. The *Swiss Times*, Geneva, printed in both French and English, is now frequently quoted in all countries.

Germany.—Though in Germany the *Relationen*, above alluded to, were in some sort the precursors of news-

papers, yet no serial N., properly so called, seems to have existed till 1615. Frankfurt was the first town that possessed its journal; next followed Fulda, Hildesheim, and Herford. The earliest Leipzig N. was instituted 1660. The first N. with a staff of foreign correspondents was the *Hamburgische Correspondent*; but no German N. can be said to have had any political weight till the institution of the *Allgemeine Zeitung*, founded by Cotta 1798, now published at Munich, which still takes rank as the first paper in Germany. During French ascendancy, the German papers were little more than echoes of the Parisian; but a number of journals of a more national character sprang up during the war of liberation. The abuse of the liberty of the press, after 1830, led to the imposition, by the diet, of somewhat severe restrictions on newspapers. Although in the last quarter-century there has been decided improvement in the literary and political character of the German newspapers, the Socialist Law of 1878 is a severe restriction of the liberty of the press. Among principal Berlin daily papers are the *Vossische Zeitung*, the *Norddeutsche Allgemeine Zeitung* (semi-official), the *Neue Preussische Zeitung* (usually known as the *Kreuz Zeitung*), *Post*, *National-Zeitung*, and *Volkszeitung*. Many of the papers published in the various German states have much influence.

Austria.—The Austrian newspapers have partaken of the advance in the newspaper press of Germany. The most important is the *Wiener Zeitung*, with its evening reprint, the *Wiener Abendpost*, not insignificant either in a literary or political view; and the *Neue Freie Presse*.

Italy.—The early *Notizie Scritte*, or Gazettes, of Venice, have been mentioned above. The news-sheets which followed them were in disfavor with the see of Rome; and a memorable bull denouncing them was issued by Gregory XIII. Till 1847, the newspapers of Italy were small, politically insignificant, and subject to strict censorship. With the accession of Pope Pius IX., a flood of political journals made their appearance, of which only one or two were conducted with any talent, and few lasted above a year. In the Sardinian dominions there continued no fewer than 45 political papers published 1852, 41 of which were in Italian and 4 in French. Of that number a great many soon afterward collapsed. The removal of the former restrictions of the press, in other parts of the kingdom of Italy, has started into life a number of newspapers: 17 political and 10 partially political papers are now published in the former domain of Victor Emmanuel, besides 31 periodicals, many of which correspond in some degree to our ideas of a N. Few are as yet of much promise. The leading articles are poor, no great social or commercial questions are discussed, and each journal is the mere advocate of one or other of the political parties. Perhaps the best, on the whole, are *Il Diritto* and *L'Opinione*, which may be compared to some of the second-rate French papers. The *Gazzetta Ufficiale del Regno d'Italia* is the ministerial organ, and *L'Italie*, published in France,

is looked upon as the organ of the department of foreign affairs. Humorous newspapers, after the model of the London *Punch*, are abundant. The *Voce della Verità* is the paper which advocates the cause of the pope. *La Libertà* and *Il Funfulla* are published in Rome; Genoa issues *Carri're Mercantile*; Milan, *La Perseveranza*; and Naples, the *Pungolo* and *Patria*.

Spain.—Sheets called *Relaciones*, giving accounts of important occurrences, appeared in Spain at irregular intervals in the 17th c., occasionally in the form of romances; but no Spanish N., properly so called, existed till the 18th c., and 50 years ago Madrid possessed but one journal. The first approach to political journalism followed the Peninsular war and the establishment of the Cortes. The gross license with which many of the then established papers were conducted led, 1824, to the suppression of all except the *Diario* and *Gaceta* of Madrid, the *Gaceta de Bayona*, and a few purely commercial or scientific. At present, about 40 journals are published in Madrid, politically and in every other respect unimportant; the most read is the *España*. The press of Portugal is as insignificant as that of Spain: the official organ is the *Diario do Governo*.

Sweden and Norway.—The earliest Swedish N. seems to have been *Ordinarie Post Tidende*, established 1643, continued till 1680. It was followed by *Relationes Curiosæ*, in Latin (1682–1701). Two French papers, *Gazette Française de Stockholm* and *Mercure de Suède*, existed in Sweden in the second half of the 18th c.; but politically the N. press cannot be said to have had any influence until the establishment of the *Argus* by Johanssen 1820. For a number of years the principal journals of Sweden were the *Füderneslandet*, organ of the royalists, and the *Aftonbladet*, organ of the reformers. The latter, on King Oscar's accession, ceased to be an opposition journal. The official paper is the *Post och Inrikes Tidningar*. Every provincial town has now its journal, and there are about 114 newspapers in all published in Sweden. Of Norwegian papers, the oldest is the *Christiania Intelligentsedler*, founded 1763. *Den Constitutionelle* is the govt. journal, and *Den Morgenblad* the organ of the opposition.

Denmark.—In Denmark, journalism is still more recent. Till 1830, only two newspapers were published in Copenhagen, both made up entirely of extracts from foreign journals. Since 1834, there has been improvement in the character, and increase in the number, of Danish journals. They numbered 36 in 1849. The oldest N. now in Denmark is the semi-ministerial *Berlingske Tidende*, founded 1749. The *Füderlandet* is the journal of the Scandinavian popular party.

Russia.—The earliest newspapers in Russia were published under the personal surveillance of Peter the Great, first in Moscow, afterward in Petersburg, to report the progress of the war with Sweden. Political journalism, properly so called, has never flourished in

Russia; and has, in fact, been allowed only in important political crises—as the French invasion 1812, the Polish insurrection 1830, and recently during the Crimean war, when the journalists were allowed to exercise their ingenuity in defending the government policy. The largest circulation was at that time attained by the *Sjævernaja Ptsch'eta*, or 'Northern Bee,' which had its feuilleton. Generally speaking, the Russian newspapers occupy themselves with scientific and literary subjects rather than public or political news. The *Journal de St. Petersbourg*, in French, is the organ of the court, and has considerable circulation out of Russia.

Turkey.—The first N. in Turkey was founded 1795 by M. Verminhac, envoy-extraordinary of the French govt. to the court of Selim III.: it was printed in French at Pera. A Frenchman of the name of Blacque established at Smyrna, 1825, the *Spectateur de L'Orient*, afterward *Courrier de Smyrne*, which had considerable political influence during the Greek war. The same M. Blacque afterward edited the official journal of the Porte, the *Moniteur Ottoman*, which has, since 1832, been reprinted in Turkish under the name *Taquîmî Vagâî*. The *Taquîmî* was till lately a very badly printed sheet; but it has much improved, and now issues weekly instead of monthly, sometimes containing respectable literary and political articles. But the most important Turkish paper is the *Djeridei Havadis*, founded 1843 by Alfred Churchill, Englishman born in Turkey. It comprises a great variety of matter, a court gazette, official appointments, home and foreign news, advertisements, prices of stocks, and a feuilleton. There are besides in Constantinople two new and popular papers: *Terguman Ahwal*, or 'Interpreter of Events,' published three times a week; and *Tas veeri Evkiar*, or 'Mirror of Thoughts,' twice a week. The latter has scientific and literary repute. The Turkish papers have no leading articles, and, from the constitution of political society in Turkey, there can be no avowed opposition to the policy of the government. The *Courrier de Constantinople*, in French, is one of the principal journals of the capital; here appear also the *Levant Herald* and the *Levant Times*, in English. And papers in French, Italian, Greek, and Armenian are published in various parts of the empire.

Greece.—Various newspapers in modern Greek appeared at Paris and Vienna before Greece obtained her independence; but the first political journal in Greece was the *Hellēnikē Salpigx*, founded 1824, and soon followed by the *Hellēnika Chronika* and *Hellēnikos Tēlegraphos* in Missolonghi, the *Philos tou nomou* at Hydra, the *Ephēmerides Athenaikai* at Athens, and the official *Genikē ephēmeristēs Hellados* at Nauplia, with its opponent the *Apollōn*, which afterward became the *Athēna*. Most of these papers disappeared 1833, on the system of sureties being introduced. The *Sōtēr* was established as the govt. organ in 1833. More than 80 newspapers are now published in Greece, the largest number in


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Athens. Of these several appear in French, Italian, and English. The leading political journal of Athens is the semi-monthly *Spectateur d'Orient*; but, generally speaking, the Greek papers make no endeavor to lead the parties in the state.

United States.—The first attempt in N. America at a journal of news and events occurred in the instance of a little paper called *Publick Occurrences both Foreign and Domestick*, designed to be a monthly and issued in Boston, the initial number dated 1690, Sep. 25. This paper was short-lived, having come in conflict with the authorities concerning some local matters, and was suppressed. The next N. issued in the colonies was the *Boston News-Letter*, which started 1704, April 24. This was followed by the *Boston Gazette*. Of the *News-Letter*, which through vicissitudes and troubles lived 72 years, there is but one complete file known, which is in the collection of the New York Historical Soc. The very first number contained arrivals by sea, obituary notices, appointments, sermons, war news—but there was not an advertisement. In fact, local news was excluded, with the exception of deaths. The first effort at reporting in this country was made for the *News-Letter* shortly after it was established. Six pirates were executed on Charles river, a little out of Boston, 1704, June 30, and a description of the scene filled nearly one-half of the paper. The *Boston Gazette* was printed on a half-sheet of foolscap. It was owned and edited by no less than five postmasters 1719–39, and by the heirs of the last postmaster to 1741, being thus a postmasters' organ. In 1741 it was merged with the *New England Weekly Journal*. We have, as interesting facts with regard to these three papers, that they started the custom of the 'organ,' the custom of newspaper rivalry, as the last two were engaged in warfare during most of their existence, and the custom of reporting. The fourth N. in the colonies was issued 1719, Dec. 22, in Philadelphia, and was called the *American Weekly Mercury*. This paper also was printed by a postmaster, Andrew Bradford. The *Mercury* introduced another feature of modern journalism: 1754, Oct. 17, it published the particulars of the battle of Phillipsburg, accompanied by diagrams. Andrew Bradford died in the latter part of 1742. The *Mercury* was suspended a week, after his death, and on its reappearance its column rules were inverted for six weeks.

The *New England Weekly Journal*, of which the 55th number, dated 'Monday, April 8, 1728,' is before us, measured 13 inches by 7. It was a single leaf, with the following imprint: 'BOSTON: Printed by S. Kneeland & T. Green, at the Printing House in Queen-Street, where Advertisements are taken in.' This paper, if not the earliest, is the earliest recorded, instance of the publication of advertisements. The number in question contains a quarter of a column of these, including announcements of several books, also the statement that a Mr.

Nath. Pigott intends to open a school 'on Monday next, for the Instruction of Negro's, in Reading, Catechizing, & Writing if required.' There is also an advertisement of a new importation of coffee, and two announcements of negro girls for sale, as follows :

 A very Likely Negro Girl, about 13 or 14 Years of Age, speaks good English, has been in the Country some Years, to be Sold, Inquire of the Printer hereof.

 A very Likely Negro Woman who can do Houshold Work and is fit either for Town or Country Service, about 22 Years of Age, to be Sold, Inquire of the Printer hereof.

All the news contained in the paper is foreign, being, four months later, from England, and the proclamation of the capt.gen. of Jamaica. For local news, excepting the advertisements, there was nothing printed but obituaries, and arrivals and departures of vessels in the port of Boston. The *Boston News-Letter* was published during the revolution, and was loyal to the home government. It was the only paper issued in Boston during the siege of that city by Washington. The *New England Courant* was issued by James and Benjamin Franklin. The first paper in New York was published by William Bradford 1725, Oct. In 1727 one was issued at Annapolis, Md., called the *Maryland Gazette*. Benjamin Franklin's *Universal Instructor* appeared in Philadelphia 1728. The *New York Weekly Journal* was published 1733 by John Peter Zenger, who was tried and acquitted for libel against the government. The *Rhode Island Gazette* was begun at Newport, R. I.; and the first papers in the south appear to have been the *South Carolina Gazette*, 1731, and the *Virginia Gazette*, 1736. A newspaper in German was issued at Germantown, Penn., 1739, and in 1743 one appeared in Philadelphia. Of all the papers during the first period of journalism in America, that issued by Benjamin Franklin, the *Universal Instructor*, whose title was changed to the *Pennsylvania Gazette* 1729, and which continued under his management till 1765, was the most important. This paper continued in existence until 1804, and was afterward re-established for a short period under the same name. Under one designation and another, it continued to exist until 1845, when it was merged with the *North American*. This closed the career of Franklin's gazette, after an existence of 117 years. At the commencement of the revolution there were seven newspapers published in New England, four in New York, and two in Virginia. One of the most important of the revolutionary newspapers was the *New York Journal, or General Advertiser*, started 1767, May 29, under the auspices of George Clinton and Philip Schuyler. While New York was in possession of the British, the *Journal* was printed first in Kingston, then in Poughkeepsie. *Rivington's Gazette* was the British organ in New York, and its proprietor was several times mobbed by the 'Sons of Liberty.' One of the contributors to this paper was Major André. From

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1748 to the peace of 1783, 49 newspapers were established in the colonies, making 67 in all, from the publication of the first 1690. The period immediately following the revolution was remarkable for the virulence of the factional and party fighting between newspapers. It is stated that 'even Washington, who came from Yorktown, like a demi-god, received more wicked and vile abuse than would now be given to an abandoned felon.' Among the journals of this period was the *Massachusetts Spy*, published in Boston by Isaiah Thomas three times every week, beginning 1770. Later it was issued twice a week, but after a few months became a weekly paper. It was one of the most powerful influences on the side of the patriots before and during the revolution. 1775, May 3, the *Spy* was removed to Worcester, Mass. Isaiah Thomas was one of the boldest of the patriots, and was on the list of 12, which included Samuel Adams and John Hancock, who were to be summarily executed if captured. To avoid this, he sent his type and press across the Charles river, just before the battle of Lexington, and had them conveyed to Worcester. It is related of him that he was concerned with the patriot Paul Revere in his memorable 'midnight ride,' celebrated in verse by Longfellow.

The first daily N. in the United States was issued in Philadelphia 1784, under the title *American Daily Advertiser*, now the *North American*. Next year was published the *New York Daily Advertiser*, of which the poet Philip Freneau was for some time editor. The *Independent Journal*, published in New York, is notable for having contained the remarkable series of articles by Hamilton, Madison, and Jay, afterward collected as 'The Federalist.' Newspapers began to extend westward with the *Pittsburg Gazette*, 1786, a paper which is still in existence. Numbers of newspapers in those days combined, an interesting instance being the *Philadelphia North American*, in which are included 10 different papers—namely, the *Pennsylvania Packet*, established 1771; the *American Daily Advertiser*, 1784; the *Gazette of the United States*, 1789; the *Evening Advertiser*, 1793; the *United States Gazette*, 1804; the *True American*, 1820; the *Commercial Chronicle*, 1820; the *Union*, 1820; the *North American*, 1839; and the *Commercial Herald*, 1840. Of the many hundred daily and other newspapers started in New York alone, from the commencement of Bradford's *Gazette* 1735 to 1827, only two are living, the *Commercial Advertiser* and the *Evening Post*. The former of these papers began its existence at the close of 1793, under the name of the *Minerva*, with Noah Webster as its editor. He soon united with his paper a semi-weekly called the *Herald*, under the name *Commercial Advertiser and New York Spectator*. It is a curious fact, in connection with the history of this journal, that in its nearly one hundred years of existence it has been in the hands of but few owners. Webster retired 1803, in favor of Zachariah Lewis, and ten years later it passed from him to Francis

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Hall, who with his son continued in its control until it became the property of Hugh Hastings, after whose death it soon came into the hands of its present owners. The *Evening Post*, as a name for a daily paper, dates back as far as 1746, when the *New York Evening Post* was started, but lived only about a year. The *Evening Post* was established as a daily and semi-weekly 1801. The first paper printed in Maine was the *Falmouth Gazette and Weekly Advertiser*, 1785. The *Daily Courier* was issued in Portland 1829, edited by Seba Smith, Jr., the original 'Jack Downing.' The first N. in Harrisburg, Penn., was the *Oracle of Dauphin*. The first in Ky. was commenced by John Bradford, in Lexington, 1786. It is stated of the *New York Gazette*, which started 1788 and was merged in the *Journal of Commerce* 1840, that one of its publishers, John Lang, was the first to collect ship news by boat in New York harbor. The prevalence of the title 'Gazette' is especially prominent in the state of S. C., which had, as early as the beginning of the 19th c., the *State Gazette*, published in Charleston by Peter Freneau, the *Carolina Gazette*, Charleston, and the *South Carolina State Gazette and Columbian Advertiser*, Columbia, printed by Daniel and J. J. Faust, state printers. Copies of these papers as far back as 1805 show a number of advertisements; and one of them is peculiarly interesting in containing an account of the attack on the frigate *Chesapeake* by the British man-of-war *Leopard*, out of which, with similar instances, grew the war of 1812. In 1793 Ohio had its first N., the *Centinel of the Northwestern Territory*, printed in Cincinnati by William Maxwell, second postmaster of the town. This was the first newspaper and printing-office established n. of the Ohio river.

The idea of publishing journals for the sake of news did not really come into vogue in the United States until about 1820. Prior to that period there had been so many exciting events in connection with the history of the newly formed Union, that all the newspapers which were founded had had for their purpose the establishing and regulating of public opinion on one or the other side of prevailing politics. Moreover, newspapers were costly and had very limited circulation, the fact that they were printed slowly, on hand-presses, having had much to do with this. The press established by Benjamin Franklin had a capacity of not more than 100 perfected sheets in an hour. From 1820, more attention began to be given to news; and when, 1833, Sep. 3, Col. R. M. Hoe, inventor of the numerous printing-presses which bear his name, started the *Sun*, the first penny N. in America, journals began to be devoted almost entirely to news. The next one-cent paper was the *Morning Herald*, progenitor of the *New York Herald*, of which the first number was published 1835, May; and this was followed by the *Tribune*, started 1841 by Horace Greeley, who had already begun his career as journalist by issuing the *New Yorker*, 1834. With these three papers may be said to have originated modern journalism in America.

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With the foundation of these newspapers originated every method of obtaining news, and this in close competition—a sort of warfare by which the public and the N. owners both were benefited. Expresses were established on steamboats and railways, and pony expresses where these did not exist. Carrier-pigeons were tried, but without much success; and the institution of correspondents at all principal news centres became an absolute necessity to a well-established journal. But all the methods of gathering news which were devised would have been useless but for the application of invention to the art of printing, to the extent of the production of an enormous number of printed sheets in the least possible time. The power and perfecting presses of Hoe, Campbell, Bullock, Walter, and others, soon gave vast impetus to journalism, from the ten-cylinder press, which could throw off 10,000 papers in an hour but which occupied a space equal to a three-story house and required 8 to 12 men to run it, to the magnificent perfecting-presses of the present day. The modern presses are more compact, require under one-fourth less working space, and are worked by three men. Their capacity ranges from 24,000 to 48,000 per hour, and in some types, as the octuple press, as many as 96,000 eight-page papers are printed per hour. In the production of these papers, sheets of 8, 12, 16, and up to 40 pages can be printed—the pages cut, often the backs pasted together—and thrown out folded and ready for mailing or delivery at the rate of 400 a minute.

The history of journalism since the war of 1812, if completely written, would be the history of the world. Especially in the United States would it be peculiar in its comprehensiveness, its detail, and its personalities, through which the biography of every prominent or notorious character, from the criminal up to the statesman, may be investigated. Such a history would begin with the publication of foreign news in the sheets of the 17th and the early part of the 18th c., domestic affairs not being then valued or considered of importance. Then came slight attempts at directing public opinion with regard to important political situations, thus beginning what is now known as the editorial page. Later on it began to reach the minds of tradesmen that a tract or circular which was seen by any considerable number of persons would afford a good method for the announcement of their wares, and thus began the system of advertising. As the circulation of papers increased, publishers, perceiving the importance and value of the announcement of this fact, made it known in their columns, and thus drew more advertisers. Thus the system of advertising began to exercise a certain degree of power over the publication of the journal itself, and competition for the emolument received by this means became one of the causes of the introduction of novel ideas and of the general rivalry between journals. As newspapers began to feel the influence of power-presses, and their circulation grew to enormous proportions, all these elements

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and factors increased in importance. The editorial page began to assert itself—sometimes as a menace, sometimes as a sustaining power—not only in politics, but in all the great and increasing enterprises, in commerce, manufactures, and finance, which were growing up with the country. Soon it became possible, and was so observed by manufacturers, tradesmen, and others, to exercise a certain influence on the expressions of opinion in journalism, through the power of advertising. In fact, advertising grew to be the main dependence of a thoroughly organized newspaper, so much so that it is frequently the case that every copy of the paper which is circulated costs much more than is paid for it. It is thus evident that advertising has great possibilities of use as an influence for the formation of opinion in whatever interest may for the time require journalistic backing. All this would naturally result in the formation of different classes of newspapers: those running on an independent basis, looking to their circulation for existence and profit, and forming and increasing this circulation through literary or other intrinsic merits; those which exist for the accumulation and distribution of the largest amount possible of actual news of importance to the reading world; and those whose existence depends partially or completely on what is in fact subsidizing, from one or another political party, or from trade organizations, or from some other industry, interest, or ‘ism.’ What is known as ‘the power of the press’ has always been in the United States more or less an unknown quantity, carrying in certain circumstances enormous weight of influence, arising from known conditions of absolute integrity and of unusual skill and judgment—also subject to variations and digressions into paths not always scrupulous or high-principled. Given a powerful engine in the hands of men desirous only of wealth, political power, or other self-aggrandizement, and given also an enormous enterprise desiring an agency through which to accomplish its objects, and you have the factors which go to the structure, the treatment, and the success of many of the most tremendous undertakings of the present century.

The religious element, or the sectarianism which speaks in its name, has had, as a rule, very little to do with the character of daily journalism in this country, though attempts, always abortive, have been made, from time to time, to exercise such an influence. This fact has brought about the necessity for publications specifically undertaking the promulgation of theological ideas, the spread of religious truths, and the encouragement in general of the vast and growing ecclesiastical institutions. There have, therefore, been, from time to time and with varying success as to business enterprises, hundreds, perhaps thousands, of religious journals established, and which have lived or died as the case might be. But this has been the case also with other papers, usually appearing weekly or semi-weekly, which have had

for their purpose the advancement of the interests of classes, professions, schools of thought, and theories of various kinds. The United States has grown to be a country of organizations. Humanity has here become gregarious to a greater degree, perhaps, than ever before known in the history of the race. It has formed itself into concentric circles illustrating every conception possible to the human mind and every interest desirable to man. These include secret societies, trades-unions, spiritistic associations, social, national, and international organizations, clubs, charitable societies, combinations for the spread of amusement, organized effort even in criminal lines as well as for suppression of crime. A notable instance of the specialization of the press is seen in what are known as 'trade papers.' The number of these is legion. There is, perhaps, not a manufacturing or commercial interest or mechanical trade which has not one or more representative periodicals. Such papers are of very great importance to the trades which they represent. Some are merely advertising sheets; others are literary in much of their contents; and others still are deeply scientific: yet each conducted to subserve the interest of the respective trade. Some instances of trade papers have been marvels of financial success. The vast number of advertisements which they publish in every issue, and the high prices which they charge per line for such advertisements, are astounding when considered in connection with the fact of the great competition that exists for all these. These papers are published weekly, semi-monthly, and monthly. Of financial papers which might be considered to belong to this class, a number are published daily. The agricultural industry, mining, manufacturing in all its branches—these are represented by hundreds of periodicals, many of which have a remarkable and continued success, though the history of journalism is strewn with the wrecks of thousands of others which did not exist long enough to pay for the original investment.

There have been numerous attempts at comic and satirical journalism in the United States. For many years it was the custom, as it still is, to admit into the columns of daily papers bits of humor or satirical allusion quoted mainly from *Punch* and other foreign papers. About half a century ago, however, there sprang up the first of a class of distinctly American humorists, beginning, perhaps, with Lieut. Derby ('John Phoenix'), and continued through Artemus Ward, Mark Twain, 'the *Danbury News man*,' Robert Burdette, and many others whose names will occur to the reader. But comic journalism started about 1850, when the *Pick* and the *Picayune* were published in New York. About the beginning of the war of secession, a number of weekly comic papers were started, including the *Lantern*, edited by John Brougham; *Young America*, conducted by Charles Gayler; the *Carpet Bag*, edited by Charles G. Halpine ('Miles O'Reilly') and B. P. Shillaber ('Mrs. Partington'); *Momus*, edited by

Charles G. Rosenberg, a clever writer and artist and the original 'Jenkins' of the *London Morning Post*; *Yankee Doodle*, which appeared 1846 and was very successful; *Vanity Fair*, longest-lived of all, published first 1859, Dec. 31. This paper included among its contributors Charles Dawson Shanly, Charles Godfrey Leland, Charles F. Browne ('Artemus Ward'), George Arnold, Henry Clapp, Fitz James O'Brien. It lasted until the end of 1862. In 1865 *Mrs. Grundy* appeared, under the editorship of Dr. H. D. Carroll and Charles D. Shanly. Thomas Nast contributed to it, as did H. L. Stephens. 1870, Apr., *Punchinello* appeared, with generally the same group of contributors and artists. It did not live a year. After these could be mentioned *Nick Nax*, the *Comic Monthly*, and the *Phunny Fellow*, specimens of a class of papers of which large numbers were born and died within brief periods of each other. In the mean time, St. Louis had produced a clever German comic paper, named *Puck*, which gave the title to the most successful humorous weekly that has ever appeared in the United States. *Puck* was published in German in New York, for some time, under the proprietorship of Keppler, the artist; and when Frank Leslie's establishment, in which he was employed, was temporarily embarrassed after the death of Mr. Leslie 1880, this able artist, taking with him a number of the art staff of Leslie's, founded the existing *Puck*. The politics of this paper being generally of the democratic order, the republican party found it necessary to offset its brilliant caricatures and incisive wit by the establishment of an illustrated humorous and satirical weekly which should present their side of party politics. They accordingly established a paper called *Judge*, which is still in existence and is conducted with success, including on its staff many well-known and able contributors.

The Sunday papers are peculiar to this country in the form in which they appeared a generation ago. In England in only a very few instances has there been publication of newspapers on Sunday, while no English daily paper has ever published a Sunday edition—the only venture in that direction being that of the *New York Herald* in London, beginning 1889. In France and other continental countries, papers have been published on Sundays as on other days. In the United States, before the civil war, Sunday papers were published in different cities as far back as 1838—more in New York than in any other city. They included the *Sunday Courier*, *Sunday News*, *Sunday Atlas*, *Noah's Sunday Times*, *Sunday Packet*, *Sunday Dispatch*, and *Sunday Visitor*, which was changed 1840 to the *Sunday Mercury*, and still exists under that name. These papers were very successful, being considered innocuous, offering usually a very mild and not displeasing literary pabulum; and till the period immediately preceding the rebellion were in respect of morals and manners faultless. Possibly a change in public sentiment, falling off in the strength of religious

and moral scruples, or other influence, caused certain of these journals to assume a morbid and sensational style and character, under which some of them have flourished vigorously, while others have perished ignominiously. But what destroyed all the influence of such journals was the invention of the Sunday issue of the daily paper—unknown in journalism until originated during the war of the rebellion by the *New York Herald*, this example being followed by the other prominent dailies, one after another, as it became evident that the public, especially during that period of excitement and deep personal interest in events, demanded its news every day. At first these Sunday issues confined their columns to the news of the world; but after a time a literary feature was introduced, including mainly selections from current foreign and American magazines, book reviews, short stories, and poetry. Gradually this feature was extended in the principal cities, such as New York, Boston, Philadelphia, Chicago, and St. Louis, and numerous four, six, eight, and even ten-sheet papers began to be printed on Sundays. The great extension of this particular enterprise was chiefly due to the discovery that advertisers were glad to advertise to a much greater extent on that day than on others, probably on the theory that readers would have more time to study their announcements than during the busy days of the week. The next feature introduced into Sunday journalism, and to a certain extent into that of every day in the week, was illustration—previously confined to the class of illustrated weeklies and the single illustrated daily published in the United States, the *New York Daily Graphic*, which after a generally precarious existence, extending over quite a number of years, and including numerous failures and resuscitations in different hands, has recently collapsed altogether as an illustrated daily. The new inventions which facilitated the rapid production of cuts, by the application of various newly discovered processes, doubtless partly grew out of and partly occasioned the large use of illustrations in the daily newspaper. To this end acted also the tremendous competition in the business, which has been so largely increased in recent years. It had been predicted that the application of illustration to journalism, and the introduction of literary features to the extent to which it has been carried, would tend largely to do away with magazines, which had hitherto held those fields to themselves. But this prediction has not been realized; on the contrary, the firmly established magazines, while undoubtedly driven to great improvement by this sudden and unexpected competition, have greatly increased in circulation, and have improved the character of their illustrated work and extended their value and use as advertising agents.

The first illustrated N. was published about 1850, at which time Messrs. Beach of the *New York Sun* and P. T. Barnum each contributed \$20,000 for the establish-

ment of an illustrated weekly in New York. Gleason and Ballou, in Boston, had introduced similar publications, and made fortunes out of their investment. In 1843 Frank Leslie, an engraver of merit, had arrived in America, and, making himself known to the publishers of *Gleason's Pictorial*, in Boston, was engaged and worked on that paper for some time. Mr. Leslie, whose real name was Henry Carter, was a draughtsman as well as an engraver, and, being ambitious, soon saw that there were in New York possibilities for him, and an open field, which were not offered in Boston. Making the acquaintance of Mr. Barnum, he became manager of the *Illustrated News*, which appeared 1853, Jan. 1, but was afterward merged in *Gleason's Pictorial*. In 1854 Frank Leslie began the publication of what has since been known as *Frank Leslie's Illustrated Newspaper*, which grew to an enormous establishment, employing 70 wood-engravers and a large number of the most able artists in the country. The house soon added to its original publication a number of others, including the *Chimney Corner*, the *Popular Monthly*, the *Ladies' Journal*, *Pleasant Hours*, etc. Mr. Leslie died 1880, and the business was thereafter successfully conducted by his widow under the name of Frank Leslie, until, 1889, she disposed of the *Illustrated Newspaper*, and, having already lopped off various publications which were unprofitable, has since confined her attention to the *Popular Monthly* and one or two other illustrated magazines. The first number of *Harper's Weekly Journal of Civilization* was issued 1857, Jan. 3, and has been conducted ever since with steadily increasing success and influence. Many other illustrated newspapers have been established, of which a number are still published with success. The *Illustrated American*, a product of the year 1890, in the elaborate elegance of its illustrations and letter-press may be considered the finest specimen of this class of paper.

The leading daily papers of the United States at present are: NEW YORK—the *Herald*, *Sun*, *Times*, *Tribune*, *World*, *Journal of Commerce*, *Press*, *Journal*, and *Star*, with the *Staats-Zeitung*, a prominent and influential German N.; the principal evening papers are the *Commercial Advertiser*, *Evening Post*, *Mail and Express*, *Telegram* (an appendage to the *Herald* establishment), and evening editions of the *Sun* and *World*. BROOKLYN—the *Eagle*, *Times*, and *Standard-Union*. BOSTON—the *Globe*, *Herald*, *Journal*, *Advertiser*, *Evening Transcript*, and *Evening Traveller*. PHILADELPHIA—the *Public Ledger*, *Press*, *Times*, *North American*, and *Evening Item*, *Telegram*, and *Star*. BALTIMORE—the *American* and *Sun*. WASHINGTON—the *Star* and *Post*. CINCINNATI—the *Commercial Gazette* and *Enquirer*. CHICAGO—the *Tribune*, *Times*, *Herald*, *Inter-Ocean*, and *News*. ST. LOUIS—the *Globe-Democrat* and *Post-Dispatch*. LOUISVILLE—the *Courier-Journal*. NEW ORLEANS—the *Times-Democrat* and *Picayune*. SAN FRANCISCO—the *Chronicle* and *Examiner*. GEORGIA—the *Atlanta Constitution*. SPRING-

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FIELD, MASS.—the *Republican*. CLEVELAND—the *Plain Dealer* and *Leader*. PITTSBURG—the *Dispatch*. Of course, while the above-named journals all are representative papers in a certain sense, and all have large local influence, and many have a widely extended domain and importance, yet they differ materially in their organization and the methods by which they are conducted. It would be impossible to give a general idea of the interior organization of a great daily N. which should cover all these; but the following will be found applicable in many respects to all, and exact in regard to the internal management of many.

The system of gathering news in a first-class modern N. in a large city comprises local reporting, correspondence by telegraph at principal news-centres throughout the country, and the telegraph cable, by which is obtained all foreign news, either direct, as with the great metropolitan dailies, or by special arrangement, in the case of large newspapers in other cities, by which the news, as cabled, is sold to them from first hands. This applies only to what is known as 'special cable.' Besides these sources of information there are the various Press Associations (q.v.), including, first, the Associated Press, which supplies news, both domestic and foreign, to all papers throughout the country which choose to pay for it. Other similar associations are the United Press, United States Press Association, the Dunlap Cable Company, etc. Still another feature in the construction of a N., a product of recent growth and one hitherto employed mainly in the interior of the country, is the system of syndicating. This is applied chiefly to literary matter, stories, sketches, and particularly to a larger description and account of important events, usually illustrated, than is practicable or customary under the common N. method. Of these syndicates there are several principal ones in New York. The idea of the syndicate as thus applied is said to have originated with Irving Bacheller, who started it in Brooklyn about 1882. A syndicate's list of patrons includes all the leading papers in the principal cities: with these it contracts to furnish, for a stipulated sum per week, literary matter of various kinds, much of which is obtained from the most important and leading authors of this and other countries, at prices which would render it too costly for newspapers to purchase individually. The syndicate possesses a staff of writers who read the newspapers carefully, and prepare articles. under instruction, on current topics, obtaining their facts regarding them from the best sources of information. Artists are employed to illustrate these articles. Papers and articles are obtained by the syndicate from contributors, also, all over the world, who are handsomely paid, the division of expense among a large number of papers enabling the syndicate to give the best prices for what it buys, to sell it to the press at rates exceedingly moderate for each paper, and at the same time to make a good profit for itself. While these syndicates pay

for contributed matter all the way from \$12 per column to as high as \$200 or \$300, the average cost to the papers throughout the country employing them is not more than a dollar and a half to three dollars per column, the charges varying according to the size of the towns or cities where the papers are published and the circulation of the papers themselves.

Still another method for the production of a N. at the lowest possible cost is the use of what is known as 'plate-matter,' applied, however, mainly to small country papers, which cannot afford the cost of much composition, or, indeed, cannot obtain local news sufficient to require it. By this system, literary and historical matter, jokes, poetry, scientific items, etc., are selected by a competent editor and set up in the office where the plate-matter is prepared. It is then stereotyped, and is furnished in lengths of any size, at so much an inch, to whatever papers choose to buy, from a single inch up to a full page. The articles being so chosen and arranged as to be of all possible sizes, the stereotyped plates can be so cut as to fill up any space vacant in whatever paper they are used. These plates are furnished weekly and sent by express to the purchaser, who puts them up and blocks them as desired. Of course, the cost, being distributed among a large number of papers, is very little. Still another form of lessening the expense of country papers is to supply from the metropolis, or other chief cities, papers of the size and style desired, one side of which is entirely printed with such matter as is wanted by the publisher or editor employing this method. By means of having included in the matter thus furnished a number of standing advertisements, the actual cost of composition of the other side of the paper is absolutely brought down almost to nothing, so that the price of the publication is practically reduced to the cost of the paper itself.

The internal staff of a leading morning N. of large circulation varies, as has been said, but, as a general rule, will be found to consist of the following: (1) The editor-in-chief, who directs the policy of the paper, generally in subordination to the wishes of the proprietor or proprietors, and who is the final resort and court of appeals for the decision of all staff questions. (2) The managing editor, who has direct control over the N. in regard to its methods of collecting news and printing the same, and who has under him the heads of all departments, being himself chief of the practical workings and management of the paper. (3) The news-editor, who fills a day position, and whose business it is to see that the events of the day are properly covered, so far as is possible, for which purpose he has control of the telegraphic correspondents and of such departments as collect their material during the daytime. (4) The night editor, on whom the final responsibility rests for the proper and accurate issue of the journal of each day; he is assisted by the telegraphic editor, who receives all the night

domestic messages and distributes them to the various editors, with the necessary instructions for their proper preparation, referring to the night editor all questions concerning which he does not feel competent to decide, or the responsibility of which he is unwilling to take upon himself. The night editor 'makes up' the paper, assigns to every department its permitted space, decides upon the size of the paper for the day, whether a single, double, triple sheet, or otherwise, and is responsible, till the time of going to press with the last edition of the paper, not only for everything that goes into it, but for everything that is left out of it. (5) The city editor, aided by one, two, or three assistants, and having under his direction a corps of 20 to 40 reporters, besides having the use of the local departments of the Press Associations (q.v.); he has all the responsibility with regard to local events, their proper and special reporting, and the general conduct and handling of everything concerning the territory which comprises his limits: in a large city this position is one of the most important, responsible, and exacting of any on a N. (6) The foreign department receives and edits all foreign cable messages, taking care to procure investigation of any local or domestic connections with the foreign news which it receives. (7) The sporting department covers all sports, in all parts of the country, including yachting, boat-racing, tennis, base-ball, foot-ball, athletics, horse-racing, prize-fighting, etc. (8) The dramatic department includes everything in relation to the stage, musical or theatrical. (9) The ship-news department, where such a department exists, includes publication of all clearances, arrivals, and departures, in all important ports of the world, these being received by the local service, by telegraph, and by cable. (10) The financial and railroad departments cover the occurrences in connection with these subjects, at the principal bourses, exchanges, and commercial centres of the world. (11) The telegraphic department receives all Associated Press dispatches, and all telegraphic communications from special correspondents throughout the country; and these are placed in the hands of the competent and experienced editors who prepare them for the composing-room. In the city department, over which the city editor presides during the daytime, and an assistant at night, a similar plan exists in the case of a number of 'copy-readers,' among whom is distributed the copy turned in by the reporters after they have completed and written their assignments. These copy-readers prepare the copy for the compositors. (12) The exchange department is charged with the newspapers that come in as exchanges from all parts of the world, its business being to read these carefully and to distribute among the different departments those which pertain to their specialties, for the information of the heads of such departments.—The editorial department proper includes the editorial writers, one of whom is chief and lays out the subjects for consideration in each day's issue, keeps

a schedule of the articles, and makes up that portion of the paper. He is responsible to the editor-in-chief for the proper carrying out of the established policy of the paper, in regard to all principal questions, but is allowed great latitude in connection with the ordinary editorial writing. The number of editors, assistants, and reporters connected with a journal such as described is about 100, though this represents the staff of the very largest establishments. To bring out a daily paper of this character requires 60 to 100 compositors and more than 50 pressmen, stereotypers, folders, and wrappers. Added to this is an army of correspondents, not fewer than 600, and covering every important locality throughout the civilized world, while including also, as a rule, a correspondent with every naval squadron which departs from our ports. Last of all comes the business office, the centre toward which the result of the work of all these expert journalists and editors, whose duties are above described, finally is directed. Here, under the supreme direction of the general manager or business manager of the establishment, are conducted all its strictly business undertakings and all the vast purchases of plant and working material. All the receipts and expenditures, of whatever nature, are audited here by an army of clerks and book-keepers, with a cashier at their head.

The modern N. presents itself as an organism, partaking of the character of an army, a hierarchy, and a civil state.

The total number of periodicals issued in the United States (1896) was 19,765, divided as follows:

Alabama.....	212	Louisiana.....	179	Oklahoma.....	101
Alaska.....	4	Maine.....	192	Oregon.....	188
Arizona.....	46	Maryland.....	204	Pennsylvania... 1,422	
Arkansas.....	250	Massachusetts..	627	Rhode Island...	75
California.....	674	Michigan.....	762	South Carolina..	123
Colorado.....	286	Minnesota.....	549	South Dakota..	257
Connecticut....	219	Mississippi.....	185	Tennessee.....	282
Delaware.....	38	Missouri.....	961	Texas.....	693
Dist. Columbia.	68	Montana.....	96	Utah.....	66
Florida.....	139	Nebraska.....	583	Vermont.....	85
Georgia.....	327	Nevada.....	26	Virginia.....	266
Idaho.....	64	N. Hampshire..	111	Washington....	223
Illinois.....	1,571	New Jersey....	393	West Virginia..	169
Indian Territ'y.	50	New Mexico....	53	Wisconsin.....	606
Indiana.....	819	New York.....	1,950	Wyoming.....	33
Iowa.....	1,034	North Carolina.	218		
Kansas.....	696	North Dakota..	136		
Kentucky.....	300	Ohio.....	1,144		
				Total.....	19,765

There were also 865 Canadian publications. The following was the frequency of issue: weekly, 14,640; monthly, 2,723; daily, 2,205; semi-monthly, 335; semi-weekly, 394; quarterly, 162; bi-weekly, 93; bi-monthly, 55; tri-weekly, 43.

The total number of N. published in the world (1897) is estimated at 50,000, distributed as follows: United States and Canada, 20,630; Germany, 6,000; Great Britain, 8,000; France, 4,300; Japan, 2,000; Italy, 1,500; Austria-Hungary, 1,200; Asia, exclusive of Japan, 1,000; Spain, 850; Russia,

NEWSTEAD ABBEY—NEW STYLE.

800; Australia, 800; Greece, 600; Switzerland, 450; Holland, 300; Belgium, 300; all others, 1,000. Of these more than half are printed in the English language.

The total number of periodicals issued in the United States (1902) was 20,156, divided as follows: Daily, 2,169; tri-weekly, 53; semi-weekly, 463; weekly, 14,276; tri-monthly, 3; bi-weekly, 55; semi-monthly, 259; monthly, 2,657; semi-quarterly, 2; bi-monthly, 66; quarterly, 153. The Canadian publications numbered 963; daily, 112; tri-weekly, 3; semi-weekly, 35; weekly, 670; bi-weekly, 3; semi-monthly, 20; monthly, 118; bi-monthly, 1; quarterly, 1.

There is an immense collection of newspapers in the British Museum, which belonged in part to the library of Sir Hans Sloane, in part to that of Dr. Charles Burney. See Andrews's *History of British Journalism* (London 1859); Grant's *The Newspaper Press: its Origin, Progress, and Present Condition* (London 1871).

NEWSTEAD ABBEY, *nū'stēd*: a monastic abbey (1170-1538), 8½ m. n. of Nottingham, England, given by Henry VIII., 1538, to Sir John Byron, whose descendant, in the time of Charles I., 1643, was made the first Lord Byron. It was made over by successive generations of Byrons into a fine baronial residence, with a beautiful estate. The fifth Lord Byron, after the homicide of a relative in a scuffle at a club dinner, shut himself up at N. A. for 33 years, 1765-98; and at his death left the title and property to his grand-nephew, the poet Byron, with the buildings in a ruined state, and the lands stripped of their trees. The poet had a few rooms made habitable, 1807, and lived there through part of the next two years. His mother died there, 1811, Aug. 1. It was sold, 1812, Sep., for £140,000, and £25,000 paid; but the buyer two years later forfeited this sum, and 1817, Nov., Byron sold it again for 90,000 guineas (£94,500), to Col. Thomas Wildman, who spent a vast sum in restoring the buildings. After his death, 1859, it was held for sale at £180,000, with but £121,000 bid for it. It was finally sold to Wm. Frederick Webb.

NEW STYLE: see CALENDAR: DATE.

NEWT—NEW TESTAMENT.

NEWT, n. *nūt* [a supposed corruption of *an evet*—from OE. *evet*, a newt: AS. *eſele*, an eft, a newt], (*Triton*): genus of batrachians of family *Salamandridæ*, more aquatic in their habits than the salamander, to which, in form and characters, they are very similar, having an elongated body and tail, and four small weak limbs. The tail is vertically compressed, and a crest is often developed on the back and tail, but the crest is characteristic of the males in the breeding season, and the tail becomes rounded when the animals leave the water, as they often do, particularly in the latter part of summer or in autumn; which, with other variations apparently dependent on circumstances, have caused multiplication of specific names. An abundant species is the COMMON N., or SMOOTH N. (*T. punctatus*, or *Lissotriton punctatus*, or *Lophinus punctatus*), 3½ to 4 inches long, brownish gray above, yellowish beneath, spotted with black, with soft, smooth skin, and two bands of pores on the head; well-known inhabitant of stagnant pools and ditches, often found also under stones and in other damp situations. The WARTY N. (*T. palustris*, or *cristatus*), also common, is 5 or 6 inches in length, blackish brown above with round spots of a darker tint, bright orange or orange-yellow with black spots on the under parts, the sides dotted with white, and the tail often exhibiting a white band, the skin rough or warty, and with many pores. The dorsal and caudal crests of the Warty N. are separate; those of the Common N. are united. Many other species occur in other parts of the world. They all feed on animal food, of which tadpoles and aquatic insects form chief portions. They deposit their eggs on the leaves of aquatic plants, each egg separately, twisting or folding the leaf with their feet so as to conceal the egg, which is surrounded by a viscous substance, so that the leaf is retained in this form. For the transformation of newts (with illustrations), see BATRACHIA. They very frequently change their skin. They possess, in an extraordinary degree, the power of reproducing lost members—a limb, a tail, even an eye—in every respect perfect. Spallanzani, who made many observations on this subject, found that the same member could be reproduced a number of times successively. Newts are also capable of surviving, though long frozen within ice, returning to activity when a thaw takes place. A strong and almost universal popular prejudice exists against them as most noxious animals, though they are not in the slightest degree venomous. They have recently, however, begun to be more favorably regarded as interesting inmates of aquaria. The above species, as foreign, first received the name N. The species of the e. United States are the SPOTTED TRITON (*Diemyctelus viridescens*), olive-green above, with lateral rows of red spots; and the RED EFT (*D. miniatus*) bright red, often found away from water.

NEW TESTAMENT: see BIBLE.

NEWTON.

NEWTON, *nū'ton*: city, cap. of Jasper co., Io.; on the Chicago Rock Island and Pacific and the Central Iowa railroads; 35 m. e. of Des Moines. It has an assessed valuation of more than \$2,000,000, and does a railroad shipping business of nearly \$200,000 annually. It contains co. court-house (cost \$36,000), union public-school building (\$45,000), Jasper Co. Normal School, opera house (\$30,000), 1 national bank (cap. \$50,000), gas and electric light plants, 3 weekly newspapers. Pop. (1890) 2,564; (1900) 3,682.

NEWTON: city, cap. of Harvey co., Kan.; on the Missouri Pacific and the Atchison Topeka and Santa Fé railroads, at the junction of the Southwestern branch of the latter with the main line; 74 m. w.s.w. of Emporia, 27 m. n. of Wichita. It has planing and flouring mills, carriage and machine factories, a large brewery, a savings-bank, 3 churches, a graded school, and a public library. Pop. (1880) 2,601; (1890) 5,605; (1900) 6,208.

NEWTON: city, Middlesex co., Mass. It is on the Charles river, which forms its boundary on three sides; and on the Boston and Albany, and the New York and New England railroads, nearly eight m. w. of Boston. It contains 10 villages, connected by a circuit railroad. The city is noted for healthfulness and for the beauty of its surroundings. Many business men of Boston have their homes here. There are water-works, gas-works, an organized fire department, and extensive manufactures for which the Charles river furnishes abundant power. Among the articles produced are carriages, boots and shoes, glue, hosiery, cordage, ink, soap, emery cloth and print cloth, dye stuffs, and various lines of fancy goods. There are also rolling mills and considerable paper is made. In the central portion of the city there is a beautiful cemetery nearly 90 acres in extent. There are about 30 churches, 2 academies, good public schools, a lyceum, several libraries, including one free to the public; 1 monthly and 2 weekly papers, and a monthly journal published by scholars of the high school; a savings bank, and 2 nat. banks, with capital \$300,000. Two asylums are maintained, and there are several noted educational institutions. Among the latter are the N. Theol. Institution (q.v.) at N. Centre; the Lasalle Female Seminary at Auburndale, founded 1851, which gives a classical course of four years, and instruction in English branches; and the English and Classical School, opened 1854, at West N.—The place was settled 1630, was set off from Cambridge and incorporated as a town 1679, and received a city charter 1873. The organization of the first city govt. was effected 1874, Jan. 1. A *History of Newton, Mass.*, by Sam'l F. Smith, D.D. was published 1880. Pop. (1870) 12,825; (1880) 16,995; (1890) 24,379; (1900) 33,587.

NEWTON.

NEWTON, Sir ISAAC: the most remarkable mathematician and natural philosopher of his own or perhaps of any other age. 1642, Dec. 25—1727, Mar. 20; b. Woolsthorpe, Lincolnshire, England. That year, remarkable in English history for the breaking out of the civil war between Charles I. and the parliament, is doubly remarkable in the history of science by the birth of N. and the death of Galileo. The conditions of science in the respective countries of these great philosophers were not more different than the characters of the philosophers themselves. Galileo died a prisoner, under the surveillance of the Inquisition, 'for thinking, in astronomy,' as Milton says, 'otherwise than the Franciscan and Dominican licensers thought.' In England it had become the practice, and soon became the fashion, through the influence of Bacon and Descartes, to discard altogether the dictates of *authority* in science. The dispositions of the two philosophers were happily suited to the situations in which they thus found themselves. Galileo's was a mind whose strength and determination grew by the opposition that it encountered. The disposition of N., on the other hand, diffident of the value and interest of his own labors, and shrinking from even scientific controversy, might have allowed his most remarkable discoveries to remain in obscurity, had it not been for the constant and urgent solicitation of his friends that they should be published to the world.

N. was the son of a farmer near Grantham, who died before his son's birth. When N. was about two years old, his mother married the Rev. Barnabas Smith, rector of the adjacent parish of North Witham. N. received his early education at the grammar school of Grantham, in the neighborhood of his home. His mother's brother, the Rev. W. Ayscough, rector of a parish near, induced N.'s mother to send her son to Cambridge; and 1661, June 5, he left home for Cambridge, where he was admitted subsizar at Trinity College. On the 8th of July following, he matriculated as sizar of the same college. He immediately applied himself to the mathematical studies of the place, mastering most of the works of any value on such subjects, and in a very few years beginning to suggest methods for extending the science. In 1665, he committed to writing his first discovery on fluxions; and to this year the popular tradition assigns the fall of the apple, as he sat in his garden at Woolsthorpe, which suggested the most magnificent of his discoveries—the law of universal gravitation. On his first attempt, however, by means of the law so suggested to his mind, to explain the lunar and planetary motions, he employed an estimate then in use of the radius of the earth, which was so erroneous as to produce a discrepancy between the real force of gravity and that required by theory to explain the motions, corresponding to the respective figures 16.1 and 13.9. He accordingly abandoned the hypothesis for other studies. These other pursuits to which he thus betook himself, consisted chiefly of investiga-

tions into the nature of light, and the construction of telescopes. By a variety of ingenious and interesting experiments on sunlight refracted through a prism in a darkened apartment, he was led to the conclusion that rays of light which differ in color, differ also in refrangibility. This discovery enabled him to explain an imperfection of the telescope not till then accounted for. The indistinctness of the image formed by the object-glass was not necessarily due to any imperfection of its form, but to the fact of the different colored rays of light being brought to a focus at different distances. He concluded rightly that it was impossible for an object-glass consisting of a single lens, to produce a distinct image. He went further, and too hastily concluding, from a single experiment, that the dispersive power of different substances was proportional to their refractive power, he pronounced it impossible to produce a perfect image by a combination of lenses. This conclusion—since proved erroneous by the discovery of the achromatic telescope by Chester More Hall, of More Hall, in Essex, about 1729, and afterward independently, by Mr. Dollond 1751—turned N.'s attention to the construction of reflecting telescopes; and the form devised by him is the one which, at later periods, reached such perfection in the hands of Sir William Herschel and Lord Rosse.

1671, Jan. 11, N. was elected a member of the Royal Soc. having become known to that body from his reflecting telescopes. At what period he resumed his calculations about gravitation, employing the more correct measure of the earth obtained by Picard in 1670, does not clearly appear; but it was in 1784 that it became known to Halley that he was in possession of the whole theory and its demonstration. It was on the urgent solicitation of Halley that he was induced to commit to a systematic treatise these principles and their demonstrations. The principal results of his discoveries were set down in a treatise *De Motu Corporum*, and were afterward more completely unfolded in the great work *Philosophiæ Naturalis Principia Mathematica*, finally published about midsummer 1687.

Shortly before the *Principia* was given to the public, N. had been called to take an active part in defending the rights of the university against the illegal encroachments of James II. His prominence on that occasion procured him a seat in the Convention Parliament, in which he sat from 1689, Jan., to its dissolution 1690. In 1696 he was appointed warden of the mint, and was promoted 1699 to the lucrative office of master of the mint, which he held till the end of his life. He again took a seat in parliament, 1701, as representative of his university. Thus engaged in the public service, he had little time left for mere scientific studies—pursuits which he always held of secondary importance to his public duties. In the interval of public duty, however, N. showed that he still retained the scientific power by which his great discoveries had been made. This was shown in his solution of

two celebrated problems proposed, 1696 June, by John Bernoulli, as a challenge to the mathematicians of Europe. A similar mathematical feat is recorded of him so late as 1716, in solving a problem proposed by Leibnitz, for the purpose, as he expressed it, of feeling the pulse of the English analysts. When in parliament, N. recommended the public encouragement of the invention of a method for determining the longitude—the first reward in consequence being gained by John Harrison for his chronometer. N. was pres. of the Royal Soc. from 1703 till his death, 25 years, being each year re-elected. In this position, and having the confidence of Prince George of Denmark, he was able to do much for advancement of science; and one of his most important works was the superintendence of the publication of Flamsteed's *Greenwich Observations*—a task, however, not accomplished without much controversy and some bitterness between himself and that astronomer. The controversy between N. and Leibnitz, as to priority of discovery of the differential calculus, or the method of fluxions, was raised rather through the partisanship of jealous friends, than through the anxiety of the philosophers themselves, who were, however, induced to enter into and carry on the dispute with some degree of bitterness and mutual recrimination. The verdict of the impartial historian of science must be, that the methods were invented quite independently, and that, although N. was the first inventor, a greater debt is owing by later analysts to Leibnitz, on account of the superior facility and completeness of his method. The details of these controversies, with all other information of the life of this philosopher, are admirably collected in the *Life* by Sir D. Brewster, who writes with not only an intimate acquaintance with N.'s works, but in the possession of all the materials collected in the hands of his family. N.'s remains received a resting-place in Westminster Abbey, where a monument was erected to his memory 1731. A magnificent full-length statue of the philosopher, executed by Roubilliac, was erected 1755, in the antechapel of Trinity College, Cambridge. This work was assisted by a cast of the face taken after death, preserved in the university library at Cambridge. In 1699, N. had been elected a foreign associate of the Acad. of Sciences and 1703, he received the honor of knighthood from Queen Anne. Among the best editions of N.'s principal works are the quarto edition of the *Optics* (Lond. 1704), and the quarto edition of the *Principia* (Cambridge, 1713).

NEWTON, JOHN: clergyman of the Eng. Church: 1725, July 24—1807, Dec. 31; b. London. He is best known as the author of immortal hymns, everywhere sung, such as 'Glorious Things of Thee are Spoken,' 'Come, my Soul, thy Suit Prepare,' 'Savior, Visit thy Plantation,' and 'How Sweet the Name of Jesus Sounds.' His life was remarkable. Son of a ship-master (who was finally gov. of York Fort, Hudson's Bay, and died there

NEWTON.

1750), N. lost by death his pious mother, a dissenter, when he was 7 years old; and his only schooling was from his eighth to his tenth year. The following year, and until he was 17 years of age, he served at sea under his father. Soon after he was impressed for service on the man-of-war *Harwich*, became midshipman, but was degraded and disciplined with severity after an effort to desert. He obtained an exchange to an African merchantman, and met such hardships that his father brought him back to his own vessel. Taking position as mate on a Liverpool slave-ship he learned to abhor the slave-trade, and this, with poor health, led him to the post of tide-surveyor at Liverpool. Meanwhile, he had married, and had begun to educate himself in mathematics, Latin, French, Greek, and Hebrew. Having by a remarkable conversion entered on a Christian life, he applied in vain at the age of 33 for admission to the Christian ministry; and not until six years subsequently was he ordained in the Church of England, accepting the curacy of Olney. In 1767 the poet Cowper settled in that parish, and became an intimate friend of the curate. Together, they published the *Olney Hymns*, 1779, and in the same year N. left to become rector of St. Mary Woolnoth, London. After 8 years of faithful work in this parish, he died. In theology, he was Calvinistic, but sympathized with the spirit of Methodism. He wrote a narrative of his life; and his works, such as sermons, letters on religion, etc., pub. in 6 vols., 1816, passed through many editions, though they are now little read.

NEWTON, JOHN: born Norfolk, Va., 1823, Aug. 24. He graduated from the U. S. Milit. Acad. 1842, became asst. professor of engineering at West Point, was engaged in various sea-coast fortifications, and 1858 was chief engineer of an expedition to Utah. At the opening of the civil war he had reached the rank of capt., was promoted 1861 brig.gen. vols., and placed in command of the defensive works at Washington. He was in the Peninsula campaign; in the battles of South Mountain and Antietam; commanded a division at the battle of Chancellorsville; and was promoted maj.gen. vols., 1863. On the death of Gen. Reynolds he succeeded to the command of the 1st corps at Gettysburg. He took part in the Atlanta campaign, commanded various posts in Fla.; and before being mustered out of the vol. service, 1866, had been brevetted brig.gen. and maj.gen. in the army. He became chief of engineers with rank of brig.gen., 1884. Under his direction the obstructions in the Hell Gate channel in New York harbor were removed. The work was in progress several years, was entirely successful, and ranks with the great engineering feats of the age. At his own request N. was retired, 1886, Aug. 27. The following day he became commissioner of public works for New York. This office he resigned, 1888, Nov. 24. He was a member of the National Acad. of Sciences, and 1884 was made an honorary member of the American Soc. of Civil Engineers. Hed. in N. Y. city, 1895, May 1.

NEWTON, RICHARD HEBER, D.D. : Prot. Episc. clergyman ; b. Philadelphia, 1840, Oct. 31 ; son of Richard N., D.D. He was educated at the Univ. of Pennsylvania and the Prot. Episc. Divinity School, Philadelphia ; was ordained deacon, 1860, priest, 1866, and assisted his father at the Church of the Epiphany, in Philadelphia, for four years. He was in charge of a church in Sharon Springs, N. Y. ; rector of St. Paul's Church, Philadelphia ; and 1869 became rector of the All Souls, or the Anthon Memorial Church in New York, which position he still (1890) holds. He is noted for the freedom of his pulpit utterances and for his interest in social and political reforms. The degree D.D. was conferred upon him by Union College 1881. Among his books are *Children's Church*, a Sunday-school service and hymn book ; *The Morals of Trade ; Womanhood ; Right and Wrong Uses of the Bible*, two editions ; *Book of Beginnings ; Philistinism ; and Social Studies*. Some of these works have been printed also in England.

NEWTON, ROBERT, D.D. : Wesleyan minister : 1780, Sep. 8—1854, Apr. 30 ; b. Roxby, Yorkshire, England. He received only a limited education, joined the Wesleyan Church when 17 years of age, and the following year began to preach. He soon afterward became a member of the British conference. While holding appointment to the Glasgow circuit, 1803, he attended the theological and philosophical lectures at the university. He labored with great success in various portions of Scotland and England. In London, 1812, he presented the claims of the British and Foreign Bible Soc., and attracted immense crowds by his eloquence. There was constant call for his services in the large cities and towns of Great Britain and, largely through his influence, the denomination made a wonderful growth in numbers and influence. He served four times as pres. of the British conference, was its sec. many years, and its delegate, 1839, to the gen. conference of the Meth. Episc. Church in the United States, where he was received with great enthusiasm. He preached to large crowds in New York, and is said to have had an audience of 15,000 people in the Monument Square, Baltimore. For half a century he was almost incessantly travelling and laboring in the interests of religion. His *Life* was published, London, 1855 ; and a vol. of his sermons appeared the following year.

NEWTON, THOMAS : English prelate : 1704, Jan. 1—1782, Feb. 14 ; b. Lichfield. He was educated at Westminster School and afterward at Trinity College, Cambridge, where he took the degree M.A. 1730, in which year also he was ordained priest. After holding several minor preferments he was made Bp. of Bristol, 1761. Without any remarkable merit N. has obtained a place in literary history by his edition of *Milton's Paradise Lost* (2 vols. 1749), and *Dissertations on the Prophecies* (3 vols. 1754—58). He wrote also a host of scriptural dissertations of little value.

NEWTON—NEWTON'S RINGS.

NEWTON, WILLIAM WILBERFORCE: Prot. Episc. clergyman: son of Richard N., D.D.: b. Philadelphia, 1843, Nov. 4. He graduated from the Univ. of Pennsylvania, 1865, studied in the Prot. Episcopal Divinity School, Philadelphia, became deacon, 1868, and priest, 1869. During his father's absence he ministered for two years to the Church of the Epiphany in Philadelphia; was rector of St. Paul's Church, Brookline, Mass., 1870-75; of Trinity Church, Newark, N. J., two years; of St. Paul's Church, Boston, four years; and since 1881 of St. Stephen's Church, Pittsfield, Mass. He originated the idea of the American Congress of Churches, which held its first meeting, 1885, in Hartford. He is noted for evangelical earnestness and a broadly liberal spirit. In addition to cantatas, he has written *Little and Wise*; *Essays of To-day*; *The Palace Beautiful*; *Priest and Man*; *Paradise*; *Prayers of the Ages*; *Ragnar, the Sea-King*; and several other books.

NEWTON-ABBOT: market town of England, county of Devon, beautifully situated in a vale on the river Lemon, 15 m. s.s.w. of Exeter. The portion of the town called Newton-Bushel is on the left side of the stream. N.-A. has been undergoing considerable improvements within recent years, being attractive to residents by its scenery and its salubrity. William of Orange, after landing at Torbay, 1688, made his first public declaration here. Pop. (1881) 9,826; (1895) 10,951.

NEWTONIAN, n. *nū-tō'nī-ăn*: a follower of *Newton's* philosophy; ADJ. pert. to Sir Isaac Newton, or to his discoveries or system.

NEWTON-IN-MAK'ELFIELD, or NEWTON-LE-WILLOWS: thriving manufacturing and market town of England, in Lancashire, 15 m. w. of Manchester, on the Manchester and Liverpool railway. Two large iron foundries, as well as printing, paper, and sugar works, an oil-distillery, and a brick, tile, and pot manufactory are in full operation. There is a beautiful lake in the town, called Newton Mere, a summer pleasure-resort. Horse-races are held here in June, and horse and cattle fairs in May and Aug., annually. Cotton and flour mills, iron foundries and glass-works are in operation; and bricks are made. Pop. (1881) 10,580; (1891) 12,861.

NEWTON'S RINGS: apparently, modifications of the colors of the spectrum, and exhibiting the colors produced by a film of air; invented by Sir Isaac Newton in his investigations of the colors produced by thin plates of any material, solid, fluid, or gaseous. He took two lenses, one convexo-plane, its convex side having a radius of 14 ft., the other equi-convex, with the radii of its surfaces 50 ft., and laid the first with its plane surface downward on the top of the second, thus producing a thin film of air between the lenses; the film being thinnest near the centre, and becoming gradually thicker outward. On slowly pressing the upper lens against the under one, a number of concentric colored rings, having

NEWTON THEOLOGICAL INSTITUTION.

the point of contact of the lenses for their centre, appeared, and increased in size when the pressure was increased. These rings, or more properly systems of rings, are seven in number, and each is composed of a number (ranging from eight in the first or smallest ring, to two in the outermost) of rings of different colors, the colors, though different in each of the systems of rings, preserving the same arrangement as the colors of the spectrum, of which they seem to be modifications; thus, in the second ring the inside color is violet, and the outside scarlet red. The colors are very distinct in the first three systems of rings, but become gradually confused and dull toward the outside, till they almost fade away in the seventh system. The centre is deep black. The thickness of the air-film at the centre is about half a millionth of an inch, and increases gradually to nearly $\frac{1}{130,000}$ of an inch, when the colors disappear.

NEWTON THEOLOGICAL INSTITUTION: Baptist seminary at Newton Centre, Mass. Its three buildings, two of which are dormitories, are on a commanding eminence. The pres. of a faculty of seven is Alvah Hovey, D.D., LL.D.; and the students numbered, the last year: seniors 14, middle class 16, juniors 15, unclassified 11; total, 56. There is an English course for non-graduates of colleges. The library has 18,000 vols. Special aid is offered by 27 scholarships of \$1,000 each, the interest on which is distributed annually, and by the Gardner Colby fund of \$10,000. A large meeting of ministers and laymen, 1825, resolved to establish the seminary, and its first session opened in Nov. of that year under Ira Chase, D.D., who, with J. Ripley, D.D., was the only instructor for six years. From 1834 to 38 were added James D. Knowles, D.D., Barnas Sears, D.D., LL.D. (afterward pres. of Brown Univ.), and Horatio B. Hackett, D.D. All these men became noted by their writings. After years of discouragement, \$100,000 for endowment was raised, and to this \$200,000 was subsequently added. As long since as 1883, 700 students had been graduated, of whom 60 became foreign missionaries, and 55 teachers in colleges and theol. institutions.

NEWTON-UPON-AYR, -är or -ār: burgh of barony and parish of Scotland, county of Ayr, on the n. side of the river Ayr, and united with the town of Ayr by three bridges: see **AYR**. N. has ship-building docks, roperies, and iron and brass foundries, and exports 100,000 tons of coal annually. Its pop. is included in that of Ayr.

NEWTOWN, *nū'town*: town and boro. in Fairfield co., Conn.; on the Housatonic, and the New York and New England railroads, 19 m. n.w. of Bridgeport, 9 m. e. of Danbury. It has 3 churches, is the seat of an acad., has a savings bank, and a weekly newspaper. There are wagon and carriage factories, saw-mills and grist-mills, comb and button factories, and a hat shop. The town is on an elevation, from which a fine view is obtained. Pop. (1880) 4,013; (1890) 3,539; (1900) 3,276.

NEWTOWN—NEWTOWN-LIMAVADY.

NEWTOWN: former vill. and tp. in Queens co., in the extreme w. of Long Island, N. Y.; on the Long Island railroad, 3 m. from Flushing, 5 m. from Jamaica, and 5 m. from New York. The n.e. portion is washed by an estuary of Long Island Sound, the East river flows on the n.w., and the city of Brooklyn joins it on the west. Hunter's Point and Astoria have been set off, but there are now six or eight villages within the tp. limits. There are more than 20 churches; excellent schools; and 3 weekly newspapers, one in German. The manufactures include straw hats, china, and oil-cloth, a large iron foundry, and rope-walks. Market-gardening is extensively conducted. Pop. (1870) 10,631; (1890) including four villages, 17,549. N. became a part of the city of New York 1898, Jan. 1.

NEWTOWN: suburban municipal dist. of Sydney, New South Wales. It is a residence suburb, with houses of the better class, and has close communication with Sydney. Pop. (1880) 15,828.

NEWTOWN: modern manufacturing town of N. Wales, county of Montgomery, 8 m. s.w. of the town of Montgomery, on the right bank of the Severn, and on the Montgomery canal, which connects it with the inland navigation of the country. It is the centre of the flannel manufactures of the county. It has 40 factories, employing in all 960 men. Pop. (1881) 7,170; (1891) 6,610.

NEWTOWNARDS, *nū-tñ-ârdz'*, or **NEWTOWNARDES**: market-town of county Down, Ireland, 12 m. e. from Belfast by railway. It contains a court-house, a town-hall, and a market-square; a Prot. Episc. church, a Rom. Cath. chapel, seven Presb. churches, numerous schools, and a union workhouse. It is a neat and well-built town, in a charming situation, of considerable trade, and with extensive muslin, flax-spinning, and weaving factories. Pop. (1871) 9,562; (1881) 8,676; (1891) 9,197.

NEWTOWN-LIMAVADY, *-līm-a-văd'dī* (Ir. *Leim-a-ma-dha*, 'The Dog's Leap'): market-town of county Londonderry, Ireland, 16 m. e.n.e. of the town of Londonderry. Pop. in 1881, 2,954. N.-L., before the establishment of English rule, was the seat of the powerful sept of the O'Canans, or O'Kanes; and during the wars of the Revolution it was the scene of more than one struggle between the followers of James II. and those of William. Its chief importance at present is as a centre of the flax trade, important in that district. It possesses a town-hall, weaving factory, extensive flour-mills, markets, and brewery; union workhouse, Prot. church and other places of worship, and two comfortable inns. Pop. (1881) 2,954.

NEW WESTMINSTER—NEW YEAR'S DAY.

NEW WESTMINSTER, *nū wĕst'nĭn-stĕr* : city of British Columbia, lat. $49^{\circ} 13' \text{ n.}$, long. $122^{\circ} 53' \text{ w.}$, on the Frazer river (here about a mile wide), 15 m. from its mouth, about 70 m. n.n.e. of Victoria. It is a terminus of the Canadian Pacific railroad, and is reached by ocean steamers. From this point river steamers pass to Yale, 100 miles above and the head of navigation. There are 5 churches, one of which has a chime of bells; a college for boys, and a school for girls under Rom. Cath. management, public schools, a hospital, and a telegraph office. The city has 2 banks, 2 daily and 2 weekly newspapers, and 1 religious monthly publication. Salmon fishing and canning are done on a large scale, there are various other fisheries, and an extensive trade in oils, lumber, grain, and furs. Considerable coal is mined in the vicinity and exported from this point. The climate is very fine, the surrounding region is well adapted to agriculture, and within a few miles of the city are deposits of gold and silver. The city was, till 1867, the seat of govt. of British Columbia, and is now the principal city on the mainland, and the second city next to Victoria, the cap., in the province. Pop. (1901) 6,499.

NEW YEAR'S DAY: first day of the year. The custom of celebrating this day by some religious observance, generally accompanied by festive rejoicing, appears to have prevailed among most of the ancient nations. The Jews, the Egyptians, the Chinese, the Romans, and the Mohammedans, though differing as to the time from which they reckoned the commencement of the year, all regarded it as a day of special interest. In Rome, the year anciently began in March; and when Numa, according to the ancient legend, transferred it to Jan. 1, that day was held sacred to *Janus Bifrons*, who was thus supposed to turn at once back upon the old year and forward into the new. On the establishment of Christianity, the usage of a solemn inauguration of the New Year was retained; but considerable variety prevailed, both as to the time and as to the manner of its celebration. Christmas Day, the Annunciation (Mar. 25), Easter Day, and Mar. 1, all have, at different times or places, shared with Jan. 1 the honor of opening the New Year; and not till late in the 16th c., was Jan. 1 universally accepted as N. Y. D. The early fathers—Chrysostom, Ambrose, Augustine, Peter Chrysologus, and others—in reprobation of the immoral and superstitious observances of the pagan festival, prohibited in Christian use all festive celebrations; and, on the contrary, directed that the Christian year should be opened with a day of prayer, fasting, and humiliation. The mandate, however, was but partially observed. The festal character of the day, generally speaking, was pertinaciously preserved, but the day was observed as a day of prayer also; and this character was the more readily attached to it when the year began with Jan. 1, as that day, being the eighth after the nativity of our Lord, was held to be the commemoration of his circumcision (Luke ii. 21).

NEW YEAR'S DAY.

The social observances of N. Y. D. appear to have been in substance the same in all ages. From the earliest recorded celebration, we find notice of feasting and interchange of presents as usages of the day. Suetonius alludes to the bringing of presents to the capital; and Tacitus makes a similar reference to the practice of giving and receiving New Year's gifts. This custom was continued in the Christian kingdoms into which the Western Empire was divided. In England we find many examples of it, even as part of the public expenditure of the court, as late as the reign of Charles II.; and the custom of interchanging presents was common in all classes of society. In France it still subsists, also in England and the United States to a small extent, though eclipsed in the latter countries by the far more popular custom of Christmas gifts. In many countries, the night of New Year's Eve, 'St. Sylvester's Eve,' was celebrated with great festivity, which was prolonged till after 12 o'clock, when the New Year was ushered in with congratulations, complimentary visits, and mutual wishes for a happy New Year. This is an ancient Scottish custom, which prevails in many parts of Germany also, where the form of wish—'Prosst (for the Lat. *prosit*) Neujahr'—'May the New Year be happy'—attests the antiquity of the custom. In many places, the practice of tolling bells at midnight, and thus 'ringing in the New Year,' is still observed. Many religious communions are wont to celebrate it with a special service. In the Rom. Cath. Church, the *Te Deum* is still sung at the close of the old year, and New Year's Day is a holiday of strict obligation. Methodist and some other churches hold a 'watch-night service' on the eve of N. Y. D., through the last three hours of the departing year—a solemn service of prayer and song and exhortation—which is hushed into a few minutes of silent prayer as the midnight hour draws near, and then breaks forth into a song of praise, greeting the first moment of the year new-born.

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NEW YORK, *nū yawrk'*: state, one of 13 original states in the Amer. Union; ranking (1900) first in population, manufactures, commerce, imports and exports, banking capital and aggregate wealth; second in agriculture and mineral productions (excluding the precious metals). Though not first in railroad mileage, her roads (including those which land their goods at the metropolis of the state and nation) rank first in the volume of business done; popularly known as the Empire State: named in honor of the Duke of York.

Location and Area.—N. Y. is in lat. $40^{\circ} 29' 40''$ — $45^{\circ} 0' 42''$ n., long, $71^{\circ} 51'$ — $79^{\circ} 45'$ w.; bounded n. and n.w. by the Dominion of Canada, also by Long Island Sound; e. by Vt., Mass., Conn., lower New York Bay, and the Atlantic Ocean; s. by N. J., Penn., the lower bay, and Atlantic Ocean; w. by Penn., Lakes Erie and Ontario, and Niagara river; greatest length e. and w. (including Long Island) 412 m.; greatest breadth n. and s. 311 m.; two-thirds of boundaries navigable water; water frontage 880 m.; 49,170 sq. m. (31,468,800 acres); cap. Albany.

Topography.—In the portion n. of the Mohawk river and Erie canal are 6 distinct ranges and 2 lesser ridges of mountains, all trending from n.e. to s.w.; in the portion s. of this line are 3 distinct ranges and a series of terraced plateaus. The ranges are: (n.) the Palمرتown from Whitehall to the s. part of Saratoga co.; Luzerne, from Ticonderoga to Montgomery co.; Adirondack, from Point Trembleau (Lake Champlain) to the Mohawk river; Au Sable, from Au Sable river (Lake Champlain) to within Montgomery co.; Chateaugay, from Lake Champlain to Herkimer co. and the Mohawk river; St. Lawrence, 10 m. n. and parallel with the Chateaugay: (s.) Highlands of Orange and Rockland cos., terminating at the Hudson river; Shawangunk, along the valley of the Rondout river; Catskills, near the Mohawk river; and the Blue or Delaware, rising in Sullivan and Delaware cos. The plateaus rise from Lake Ontario and the Ridge Road, the first extending to Niagara river above the Falls, the second to the Genesee Falls, and then rising to the adjacent summit level. Near the St. Lawrence ridge is the Black River Highlands, and between it and the Mohawk river Hasenclever ridge. The Adirondack range contains the highest peaks in the state, Mt. Marcy, 5,402 ft., Mt. McIntyre, 5,201 ft., Gothic and Basin nearly 5,000 each, Mt. Dix. 4,916, Mt. Seward 4,384, and Mt. Santanoni, 4,644. Other summits, belonging to the Hudson Highlands, and familiar to travellers along the Hudson river, are: Butter Hill, Crow Nest, Bear, Anthony's Nose, Breakneck, Beacon Hill, and Dunderberg. The principal rivers are the Hudson, navigable from New York to Troy, 160 m., and famed for the rugged magnificence of its scenery, particularly between New York and West Point; the Mohawk, chief tributary of the Hudson, 135 m. long; the St. Lawrence, which forms the n. boundary of the state for nearly 100 m.; the Oswego, which re-

ceives the waters of the cluster of interior lakes; the Black and Genesee rivers, emptying into Lake Ontario; the Buffalo, emptying into Lake Erie; the Oswegatchie, Grasse, and Raquette, affluents of the St. Lawrence; Chazy, Saranac, Au Sable, and Woodcreek, emptying into Lake Champlain; and the Niagara, connecting Lakes Erie and Ontario. Portions of the state also are drained by the Alleghany, Delaware, and Susquehanna rivers. The lakes comprise the e. end of Erie and half of Ontario and Champlain on the boundaries, and George, Schroon, Oneida, Onondaga, Otisco, Skaneateles, Owasco, Cayuga, Seneca, Crooked, Canandaigua, Hemlock, Silver, Chautauqua, the Upper and Lower Saranacs, Moose, and more than 200 others. The falls include Niagara, Trenton, Watkins, Taghkanic, Genesee, High, Chittenango, Kaaterskill, Au Sable, Ticonderoga, Lyon's, Bakers, and Cohoes. The leading islands are Manhattan, containing the central part of New York; Long Island; Staten Island; Randalls, Ward's, Blackwell's Governor's, and Davids, near New York; Coney, Fire, and Shelter Islands along the coast; and more than 1,000 in the lakes and in the St. Lawrence and Hudson rivers. New York has a grand harbor, approached through the lower and upper bays, Long Island Sound, Staten Island Sound, and the East river; there are several bays on Lake Ontario, and two notable harbors on Lake Erie—Buffalo and Black Rock.

Climate.—The climate is generally healthful, with mean temperature 46-49°, mean maximum of heat 92°, mean minimum, -12°, mean fall of rain and snow 40.93 inches, annual range of thermometer 104°, mean length of season of vegetation 174 days.

Geology.—The geological series of N. Y. ranges from the oldest paleozoic rocks to the lowest representatives of the carboniferous system, and is known geologically as the New York System. The Laurentian system, containing ancient crystalline rocks, predominates in the Adirondack region, and shows gneissoid, granitic, labradorite, and hypersthene rocks. The Laurentian is followed by the Potsdam Sandstone system, above which is calciferous sandstone. The Trenton group nearly encircles the Laurentian system, other prominent groups are the Utica slate and Hudson river, Shawangunk conglomerate, Oswego gray sandstone, Medina sandstone, Clinton and Niagara groups, water lime and salt groups, upper and lower Oriskany sandstone, Hudson river blue stone, Catskill red sandstone, and Onondaga salt group. The economic properties are magnetic, red, brown hæmatite, specular, and bog-iron ores; lead ore; some zinc, copper, manganese, and barytes, salt, sulphur, chalybeate, magnetic, and other mineral and medicinal springs; granite; white and colored marbles; gray and blue lime-stones; slate, flagstones, and trap-rock for street paving; and natural gas, in Chautauqua, Dutchess, Oneida and Monroe cos. The forests show 12 species of pine, 15 of oak, 5 of maple, 4 of hickory,

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and 3 each of ash, birch, and elm. A few years ago nearly half the state was covered with valuable forests, and the recent destruction of trees has been so great that a strong demand has been made on the legislature to check the wantonness, and to preserve the forests that are left, especially in the Adirondack region. The greater part of the soil is arable, and more than two-thirds of the farm lands are improved and under high cultivation. St. Lawrence, Delaware, Chenango, Chautauqua, Jefferson, and Orange cos. comprise the great dairy region; Oneida, Madison, Otsego, and part of Chenango cos. the hop region; the islands of the Hudson and of the lakes in the central part of the state, the grape districts; Long Island the market-gardening; and the mountainous regions, the best grazing lands.

Zoology.—The state abounds in a variety of species of animals; among which are black bear, fallow deer, elk, moose, opossum, raccoon, wolverine, several martens, weazel, ermine-weazel, mink, otter, wolf, gray and black panther, gray and red fox, several lynx, seal, hooded-seal, walrus, whale, porpoise, grampus, beaver, rabbit, and several species of rat. The fisheries comprise river, lake, and sea, and yield white fish, shad, cod, mackerel, and menhaden for oil and guano. There are 6 orders of bony fishes and 3 of cartilaginous; 10 orders and 60 species of crustaceans; and 6 orders and numerous species of mollusks. A number of trout and deer preserves are maintained by organizations of sportsmen in the interior. The birds include birds of prey, of passage, swimmers, and waders. The turtle, lizard, and serpent tribes are represented by about 40 species. Oyster-planting is a large and growing industry.

Agriculture.—In 1890 the farm-lands covered 21,961,562 acres, of which 16,389,380, or 74.6 per cent., were improved; 226,223 farms, making an average of 97 acres per farm. Of these, 65,900 farms are under 50 acres, 67,837 from 50 to 100 acres, 91,323 from 100 to 500 acres, 972 from 500 to 1,000 acres, and 193 of 1,000 acres and over; there were 180,472 cultivated by owners (201,186 in 1880) and 45,751 hired; value of land, fences, and buildings \$968,127,286; implements and machinery \$46,659,465; live stock on hand June 1, \$124,523,965; farm products for the year \$161,593,009; fertilizers purchased \$3,627,726. The live stock comprised 664,430 horses, 4,636 mules and asses, 37,293 oxen, 1,440,230 milch-cows, 653,869 other cattle, 843,342 swine, 1,528,979 sheep (not including spring lambs); live-stock products: 1,187,120 fleeces wool, 6,715,686 lbs., 663,917,240 gals. milk, 98,241,813 lbs. butter, 4,324,028 lbs. cheese; there were 8,421,667 chickens and 784,464 other fowl, producing 45,807,106 doz. eggs. The principal products were: barley, 349,311 acres, 8,220,242 bu., buckwheat, 280,020 acres, 4,675,735 bu.; Indian corn, 493,320 acres, 15,109,969 bu.; oats 1,417,371 acres, 38,896,479 bu.; rye, 236,874 acres, 3,065,623 bu.; wheat, 462,561 acres, 8,304,539 bu.; flax, 2,922 acres, 21,307 bu. seed, 15,826 lbs. fibre; sorghum, 114 acres, 8,305 gals. molasses; maple-sugar, 10,485,623

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lbs.; maple-syrup, 457,658 gals.; hay, 5,243,010 acres mown, 6,675,658 tons harvested; tobacco, 8,629 acres, 9,316,135 lbs.; Irish potatoes, 24,616,736 bu.; sweet potatoes, 2,281 bu.; orchard products, apples 8,493,846 bu., apricots 231 bu., cherries 44,296 bu., peaches 169,976 bu., pears 588,767 bu., plums and prunes 73,411 bu.

In 1895 the principal crops were: Indian corn, 506,016 acres, 18,014,170 bu., value \$8,106,377; wheat, 403,374 acres, 7,301,069 bu., value \$4,964,727; oats, 1,440,579 acres, 45,666,354 bu., value \$12,786,579; hay, 4,873,320 acres, 3,557,524 tons, value \$48,738,079. In 1900 N. Y. had 226,720 farms, covering 22,648,109 acres, of which 15,599,986 acres were improved and 7,048,123 unimproved, and all farm property, including buildings, improvements and machinery, was valued at \$1,069,723,895.

Manufactures.—N. Y. had (1880) 42,739 manufacturing establishments, employing 364,549 males above 16 years of age, 137,455 females above 15 years of age, and 29,529 children and youths, total hands 531,533; using capital \$514,246,575; paying in wages \$198,634,029; using materials valued at \$679,612,545; and yielding products valued at \$1,080,696,596. In 1900 N. Y. had 78,658 manufacturing establishments, with \$1,651,210,220 capital, 849,056 employees, paying \$408,855,652 wages, using materials valued at \$1,143,791,776, with product valued at \$2,175,726,900. The table on the two following pages gives the number of establishments, employees, the capital, wages, materials and products of leading industries for 1900.

Fisheries.—In 1890 the fisheries of the state employed a capital of \$5,125,361, fishermen 7,162, shoremen 2,159, vessels 809, tonnage 9,771, boats 5,289, value \$403,226. The shell fish industry of N. Y. is constantly increasing, and in 1901 was valued at \$7,000,000 in seed oysters, marketed oysters, clams and lobsters.

Ship-building.—In 1900 there were 227 ship building establishments in the state, which employed 5,572 hands, used capital \$9,675,080, paid wages \$3,181,939, materials \$3,115,997, and yielded products \$8,657,371. Products (1900) 14 iron and steel vessels, 7,182 tons; 149 wooden vessels, 42,999 tons; 197 canal-boats, 34,959 tons; 2,430 other boats, 352,070 tons. During 1896 there were built 29 sailing vessels, 366 tons; 31 steam vessels, 6,056 tons; 12 canal-boats, 1,324 tons; 17 barges, 4,629 tons; total 89 vessels, 12,375 tons.

Mines and Quarries.—In 1890 the value of all the mineral products of the state was \$24,165,206. No gold, silver, nor coal was produced. The chief product was iron ore 1,247,537 tons, value \$3,100,216; there were 35 producing iron mines requiring 3,178 employees, paying \$1,087,252 wages, using \$572,502 materials, and requiring a total expenditure of \$12,118,541; total capital \$12,489,481, of which \$9,093,455 was in land, \$1,603,982 in buildings and fixtures, and \$990,364 in tools, implements, and live stock. The production of pig iron for a number of years was: (1890) 329,804 short tons, (1891) 315,112, (1892) 310,395, (1893) 191,115, (1894) 175,185, (1895)

Industries.	Establish- ments.	Capital.	Employees.	Wages.	Materials.	Products
Agricultural implements.....	87	\$20,115,962	5,551	\$2,797,269	\$4,824,871	\$10,537,254
Artificial feathers and flowers.....	157	2,981,273	4,019	1,257,143	2,193,956	5,016,463
Blacksmithing and wheelwrighting.....	5,394	7,925,015	4,834	2,919,140	3,290,637	11,699,115
Bookbinding and blank-book making.....	298	5,354,004	7,152	3,152,739	3,132,118	9,049,198
Boots and shoes, factory product.....	223	11,983,239	15,796	6,138,653	15,611,386	25,885,631
Boxes, fancy and paper.....	246	3,725,166	8,276	2,617,157	3,317,401	8,379,757
Bread and bakery products.....	3,000	19,434,257	14,554	7,414,018	23,557,866	43,051,251
Brick and tile.....	217	8,740,660	6,737	2,764,879	1,108,595	5,684,320
Carpentering.....	2,981	13,699,223	18,547	12,406,614	20,579,936	46,617,814
Carpets and rugs other than rag.....	12	12,870,200	8,603	3,308,438	7,681,097	15,029,218
Cheese, butter, and condensed milk.....	1,908	7,084,130	2,439	1,157,081	22,486,869	26,557,888
Chemicals.....	92	22,105,837	4,531	2,302,999	8,069,561	15,994,366
Clothing, men's.....	2,531	51,350,648	41,300	19,579,938	64,260,231	126,478,057
Clothing, women's factory product.....	1,673	29,283,205	48,717	21,987,896	56,848,074	106,892,390
Coffee and spice roasting and grinding.....	87	9,405,886	1,541	711,404	18,130,868	22,470,856
Confectionery.....	858	8,330,656	7,230	2,674,077	10,683,276	18,842,148
Cordage and twine.....	18	7,590,958	3,824	1,292,139	6,534,147	9,790,644
Cotton goods.....	34	14,509,211	8,659	2,582,494	5,257,419	9,949,936
Electrical apparatus and supplies.....	134	17,697,352	10,370	5,666,702	12,538,790	22,695,024
Engraving, steel, including plate printing.....	97	3,607,505	1,677	1,153,354	723,334	2,726,644
Flouring and grist mill products.....	1,513	23,384,858	2,489	1,284,438	36,523,959	42,796,340
Foundry and machine-shop products.....	1,353	107,926,155	50,173	27,576,739	41,814,790	96,636,517
Fur goods.....	560	7,299,989	4,454	2,486,071	8,732,323	15,328,996
Furnishing goods, men's.....	270	16,158,628	21,610	7,299,054	15,865,729	31,000,834
Furniture.....	354	16,436,743	14,481	6,933,087	9,751,817	23,643,245
Gloves and mittens.....	244	6,219,227	9,889	2,716,223	6,317,033	10,835,898
Hats and caps, not including wool hats.....	288	2,601,654	4,506	1,994,237	4,288,588	8,343,983
Hosiery and knit goods.....	242	20,203,640	26,470	8,964,097	20,218,200	35,886,048
Iron and steel.....	30	12,183,866	5,418	3,062,711	7,676,155	13,858,553

Industries.	Establish- ments.	Capital.	Employees.	Wages.	Materials.	Products.
Ironwork, architectural and ornamental.....	203	\$6,167,239	4,942	\$2,936,838	\$6,877,269	\$12,745,249
Jewelry	250	5,828,008	3,122	2,001,816	5,427,002	10,244,624
Leather, tanned and curried.....	147	19,062,817	6,530	2,775,115	17,254,947	23,205,991
Liquors, malt.....	225	95,059,875	7,424	5,630,996	10,519,578	56,157,854
Lithography and engraving.....	111	12,288,055	6,335	3,497,757	3,790,350	11,002,856
Lumber, mill products.....	1,765	8,097,840	6,550	2,737,361	9,038,425	15,765,977
Lumber, planing-mill products.....	509	2,564,841	11,515	5,583,243	18,507,066	29,756,257
Malt.....	57	2,624,808	756	363,198	4,510,431	5,918,025
Millinery and lace goods.....	393	7,720,991	11,274	4,031,573	11,177,259	21,037,182
Musical instruments.....	192	14,313,495	7,214	4,200,754	6,868,284	15,569,839
Oil, linseed.....	9	4,084,574	391	199,174	7,393,925	8,427,271
Paints.....	82	11,318,449	2,173	1,175,277	8,344,936	12,543,825
Paper and wood pulp	179	37,349,390	9,268	4,099,771	14,563,222	26,715,628
Patent medicines and compounds.....	392	12,809,437	2,885	1,182,657	4,914,438	17,075,937
Petroleum refining.....	4	16,970,492	2,629	1,306,084	23,435,357	27,184,524
Printing and publishing.....	2,640	79,488,361	32,948	20,309,991	23,364,449	95,232,051
Ship-building.....	227	9,774,081	5,572	3,181,959	3,115,997	8,647,271
Shirts.....	324	9,526,124	13,565	4,699,177	10,721,912	22,782,362
Silk and silk goods.....	92	9,890,207	7,861	2,861,818	10,721,902	22,782,362
Slaughtering and meat-packing (wholesale).....	53	7,309,162	1,530	777,738	6,570,037	12,706,216
Soap and candies.....	91	7,669,979	2,020	821,340	16,980,708	19,624,187
Steam-fittings and heating apparatus.....	42	7,487,854	2,918	1,674,778	7,853,624	12,433,645
Sugar and molasses, refining.....	14	64,020,999	3,275	1,877,320	3, 51,978	7,751,104
Tobacco, cigars, and cigarettes.....	3,055	20,733,667	26,051	11,157,020	86,148,971	90,680,478
.....	17,380,949	49,028,479

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181,702, (1896) 206,075; number of furnaces (1895) 22; rolled iron and steel (1895) 119,811 tons, (1896) 80,873 tons. In 1890 there were 404 stone quarries, employing 6,295 hands, paying \$2,150,168 wages, requiring a total capital of \$5,697,329, and yielding products to the value of \$4,418,143. Of this output, \$222,773 was granite (from 13 quarries); marble \$354,197 (14 quarries); limestone \$1,703,830 (157 quarries); sandstone \$702,419 (63 quarries); bluestone \$1,303,321 (142 quarries); slate \$126,603 (15 quarries).

Commerce.—By ocean, river, canal, and railroad, N. Y. ranks first among the states in amount of foreign and domestic commerce. In 1896 N. Y. had a total of 4,867 vessels entered at the several ports with 1,305,011 tons; of these, 254 vessels (345,216 tons) were registered, 3,517 (945,367 tons) enrolled, and 1,996 (14,428 tons) licensed; 2,046 vessels (383,313 tons) were sailing vessels, 1,519 (683,709 tons) steam, 604 (66,732 tons) canal-boats, and 698 (177,257 tons) barges. The imports and exports of merchandise for the calendar year 1902 was as follows:

Customs Districts.	Imports.	Exports.
New York.....	\$591,238,600	\$491,801,150
Buffalo Creek.....	5,836,930	16,553,760
Cape Vincent.....	245,352	146,326
Champlain	4,152,794	8,451,043
Dunkirk.....	11,233	.....
Genesee.....	836,082	1,192,245
Niagara.....	3,063,901	8,958,189
Oswegatchie.....	15,472,906	4,199,866
Oswego.....	553,483	1,156,424
Albany.....	644,720	.....
Total.....	\$622,056,001	\$532,459,003

The imports and exports of gold and silver coin and bullion for the calendar year 1902 were as follows:

Customs Districts.	Gold.		Silver.	
	Imports.	Exports.	Imports.	Exports.
New York.....	\$6,855,442	\$29,090,910	\$3,985,619	\$26,321,671
Champlain.....	999,053	3,597,251	39,120	61,985
Total.....	\$7,854,495	\$22,688,161	\$4,024,739	\$26,383,656

Railroads.—The first railroad in N. Y.—from Albany to Schenectady 17 m.)—was opened 1831. Since then the development has been (1832) 39 m.; (1845) 719; (1855) 2,444; (1865) 2,769; (1870) 4,927; (1880) 6,008; (1885) 7,311.40; (1888) 7,437.85; (1890) 7,746; (1891) 7,887; (1892) 8,104; (1893) 8,117; (1894) 8,148; (1895) 8,205. In 1895 the capital stock was \$436,727,083, funded debt \$438,216,679, total investment \$893,805,726, gross earnings \$94,866,874 (\$26,332,692 from passengers, \$61,855,612 from freight), net earnings \$28,413,276, interest paid on bonds \$20,635,-

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436. dividends on stock \$9,164,933, cost of all roads with equipment \$865,468,985. N. Y. had (1896) 109 street railroads, covering 1,904 miles and running 10 381 cars; of these, 295 miles (2,058 cars) were horse, 1,382 miles (4,559 cars) electric, 55 miles (1,022 cars) cable, and 172 miles (1,571 cars) miscellaneous. The principal trunk railroad lines were the New York Central and Hudson River, the New York Lake Erie and Western, the New York Ontario and Western, and the Delaware and Hudson Canal Co.'s road. Nearly all the other roads (many of which retained their original or local names) were owned or leased by the trunk-line corporations. The most extensive system is the New York, Lake Erie and Western, chartered 1832, and opened from Piermont to Goshen 1841. On 1901, Jan. 1, the total length of railroads within the State was 8,115 miles, of which 20 miles were constructed during the previous year.

Canals.—There were (1890) 11 canals wholly and 2 partially in the state; the former, with navigable feeders, had total length of 906.95 m., the latter had a length in the state of 105 m. The canals in the state were owned by it; those tapping the state, the Delaware and Hudson (87 m. in N. Y.) and the Junction (18 m. long), were owned by corporations. The state canals were the Erie (q.v.), extending from Albany to Buffalo, built 1817–62, and the Champlain, Whitehall to Waterford, 1817–37; Oswego, Syracuse to Oswego, 1825–62; Cayuga and Seneca, Montezuma to Cayuga and Seneca lakes, 1825; Black River, Rome to Carthage, 1836–61; Genesee Valley, Rochester to Olean, 1837–40, with Dansville branch, Shakers to Dansville, 1840, and Millgrove extension, Olean to Millgrove, 1857–61; Chemung, head of Seneca Lake to Elmira, 1830–33; Chenango, Utica to Binghamton, 1833–37, with extension from Binghamton to the Penn. state line 1833–37; Oneida River Improvement, Three River Point to Brewerton, 1839–50; Oneida Lake, Oneida Lake to South Bay, 1832–36; Crooked Lake, Dresden to Penn Yan, 1830–33; and Baldwinsville, to Jack's Reef. The Delaware and Hudson extends from Honesdale, Penn., to Rondout, N. Y., 1826–28, and the Junction from Elmira, N. Y., into Penn. The cost of building and improving the chief canals of the state, with their dimensions, etc., are shown in the following table:

CANALS	Length (miles).	Width (feet).	Depth (feet).	Locks (number).	Cost of Building and Improving.
Erie and branches..	387.00	52½	7	72	\$52,540,800
Oswego.....	38.00	56	7	18	5,239,526
Cayuga and Seneca..	25.00	56	7	11	2,232,632
Champlain ..	81.00	44	6	32	4,044,000
Black River..	35.00	28	4	109	3,581,954
Delaware and Hudson	86.00	32	6	107	6,339,210
Total	652.00	349	\$73,978,122

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CANALS.	Cost.	Revenue.
Erie and Champlain	\$95,040,407.68	\$130,930,995.37
Oswego.....	8,082,245.08	3,717,906.93
Cayuga and Seneca	3,017,161.60	1,054,800.15
Black River.....	5,645,528.75	305,525.54
Genesee Valley.....	9,569,948.52	859,612.30
Chemung.....	3,428,252.41	525,425.97
Chenango.....	6,886,280.83	740,777.03
Oneida River Improvement	263,242.80	217,061.34
Oneida Lake.....	580,626.05	65,188.47
Baldwinsville.....	39,519.94	1,261.43
Crooked Lake	821,271.13	45,352.71
Total	\$133,374,484.74	\$138,463,845.71

The ordinary repairs and operating expenses on the N. Y. state canals for the year ended Sep. 30, 1895, was \$756,059; there were 3,500,314 tons of freight carried, of which 974,870 tons were forest products, 644,009 agricultural products, 251,537 merchandise, 133,911 manufactures. In 1896, grain shipments by canal from Buffalo were: wheat 13,487,385 bu., corn 3,204,012 bu., oats 12,147,062 bu., barley 4,274,766 bu., rye 2,755,771 bu., total 35,868,996 bu.

Religion.—The Rom. Cath. Church reported 1890: *Archdiocese of New York* (diocese erected 1808, created archbishopric 1850): 1 abp.; 152 churches with resident priests and 44 without (196); 64 chapels; 48 stations, 325 secular priests, 30 not affiliated, 145 regular (500); 391 novices, postulants, and brothers; 2,288 novices, postulants, and religious women; 2 seminaries (262 students); 4 colleges (1,167); 18 academies for boys (1,116); 32 academies for girls (2,405); 7 orphanage schools (1,710); 10 industrial and reform schools (3,247); 50 parochial schools for boys (15,367) and 50 for girls (15,772) in the city, and 30 for boys (3,721) and 30 for girls (4,023) in the country—total boys 19,088, girls 19,795 (38,883); 7 orphan asylums (1,710 inmates); 19 homes for destitute and wayward children (10,250); 6 hospitals (5,127); 3 homes for aged persons (806); 1 insane asylum (56); 1 foundling asylum (1,670); and estimated Rom. Cath. pop. 800,000. *Diocese of Albany* (established 1847): 1 bp.; 167 priests; 87 churches with resident priests and 37 without (124); 42 chapels; 74 stations; 3 academies for boys; 3 academies for girls; 7 orphan asylums; 2 homes for the aged; 2 hospitals; and estimated Rom. Cath. pop. 200,000. *Diocese of Brooklyn* (1853): 1 bp.; 185 priests; 119 churches; 32 chapels and stations; 1 seminary (30); 2 industrial schools; 9 asylums; 4 hospitals; 2 homes for the aged; 1 home for invalids; 1 home for news-boys; 2 colleges (437); 3 select schools for boys (270); 15 select schools for girls (1,239); 45 parochial schools for boys (12,195); 46 parochial schools for girls (12,966); 9 schools not classified—total in select and parochial schools

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27,755; estimated Rom. Cath. pop. 230,000. *Diocese of Buffalo* (1847): 1 bp.; 182 priests; 147 churches; 9 religious houses for males; 47 religious houses for females; 55 religious communities; 4 colleges for boys; 6 academies for girls; 61 parochial schools; 16,000 pupils; 2 protectories; 5 orphan asylums; 4 hospitals; estimated Rom. Cath. pop. 132,551. *Diocese of Ogdensburg* (1872): 1 bp.; 78 priests; 59 churches with resident priests and 39 without (98); 15 chapels; 53 stations; 14 religious communities of women and 4 of men; 14 convents; 1 hospital; 1 orphanage; 17 parochial schools; 2,800 pupils; estimated Rom. Cath. pop. 65,390. *Diocese of Rochester* (1868): 1 bp.; 82 priests; 88 churches; 1 seminary; 3 academies for young ladies; 1 hospital; 5 orphan asylums; 36 parochial schools; 9,637 pupils; estimated Rom. Cath. pop. 77,000. *Diocese of Syracuse* (1886): 1 bp.; 75 priests; 80 churches; 15 chapels; 47 stations; 3 academies for boys; 4 academies for girls; 3 select schools; 5 orphan asylums; 2 hospitals; estimated Rom. Cath. pop. 100,000. *Total*: 1 abp.; 6 bps.; 1,269 priests; 851 churches; 390 chapels and stations; 6 seminaries; 94 academies; 414 parochial schools; 107,574 pupils; 105 charitable institutions; estimated Rom. Cath. pop. 1,604,941.

The Prot. Episc. Church reported 1890: *Diocese of New York* (organized 1785): 1 bp.; 355 clergy; 205 parishes and missions; 48,405 communicants; 3,478 Sunday-school teachers; 36,553 scholars; 28 charitable and educational institutions; aggregate contributions \$1,915,824. *Diocese of W. N. Y.* (1838): 1 bp.; 112 clergy; 113 parishes and missions; 14,947 communicants; 1,270 Sunday-school teachers; 10,923 scholars; 9 institutions; contributions \$332,240. *Diocese of Albany* (1868): 1 bp.; 126 clergy; 176 parishes and missions; 15,619 communicants; 1,100 Sunday-school teachers; 9,711 scholars; 15 institutions; contributions \$332,806. *Diocese of Central N. Y.* (1868): 1 bp.; 108 clergy; 140 parishes and missions; 14,809 communicants; 1,031 Sunday-school teachers; 8,853 scholars; 9 institutions; contributions \$248,740. *Diocese of Long Island* (1868): 1 bp.; 112 clergy; 115 parishes and missions; 20,791 communicants; 2,076 Sunday-school teachers; 17,937 scholars; 5 institutions, besides the Cathedral of the Incarnation and the Cathedral Schools (see GARDEN CITY); contributions \$674,885. *Total*: 5 bps.; 813 clergy; 749 parishes and missions; 114,571 communicants; 9,005 Sunday-school teachers; 83,977 scholars; 68 institutions; contributions \$3,504,495.

The Meth. Episc. Church reported 1889: *E. German Conference*, New York dist.: 12 local preachers, 23 churches, 2,764 members, 28 Sunday-schools, 533 officers and teachers, 3,635 scholars, church property \$310,200, 17 parsonages, value \$63,200. *New York Conference*, dists. of New York, Poughkeepsie, Newburgh, and Kingston: 135 local preachers, 409 churches, 53,076 members, 457 Sunday-schools, 6,376 officers and teachers, 44,454 scholars, church property \$4,557,500, 208 parsonages, value \$714,495. *New York E. Conference*, dists. of Brooklyn, New

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York, and New York E. : 173 local preachers, 219 churches, 41,568 members, 222 Sunday-schools, 5,466 officers and teachers, 47,384 scholars, church property \$3,921,975, 123 parsonages, value \$598,500. *N. New York Conference*, dists. of Adams, Herkimer, St. Lawrence, Utica, and Watertown: 90 local preachers, 284 churches, 28,076 members, 326 Sunday-schools, 4,221 officers and teachers, 28,913 scholars, church property \$1,250,850, 165 parsonages, value \$238,100. *Troy Conference*, dists. of Albany, Plattsburg, Saratoga, and Troy: 99 local preachers, 280 churches, 37,908 members, 320 Sunday-schools, 4,674 officers and teachers, 33,920 scholars, church property \$2,039,200, 153 parsonages, value \$288,700. *Central New York Conference*, dists. of Auburn, Cazenovia, Elmira, Geneva, Ithaca, and Syracuse: 110 local preachers, 294 churches, 34,431 members, 332 Sunday-schools, 4,800 officers and teachers, 33,558 scholars, church property \$1,686,950, 172 parsonages, value \$278,900. *Genesee Conference*, dists. of Buffalo, Corning, Genesee, Olean, and Rochester: 126 local preachers, 340 churches, 33,132 members, 398 Sunday-schools, 5,435 officers and teachers, 41,371 scholars, church property \$1,975,630, 195 parsonages, value \$363,330. *Total*: 7 conferences, 28 districts, 745 local preachers, 1,849 churches, 230,955 members, 2,063 Sunday-schools, 31,505 officers and teachers, 233,235 scholars, church property \$15,742,305, 1,033 parsonages, value \$2,545,155.

The Presb. Church in the U. S. of Amer. reported 1890: 1 synod, 25 presbyteries (state work), 1,019 ministers, 783 churches, 152,865 members, 156,481 Sunday-school members, and \$1,948,100 contributions for congregational purposes.

The Ref. Church in America reported 1889: 18 classes and part of the Paramus (N. J.) classis; 26,072 families; 299 churches; 335 ministers; 49,546 members; 376 Sunday-schools; and 54,100 Sunday-school officers and scholars.

The Bapt. Church reported 1890: 43 associations; 821 ministers; 874 churches; 124,483 members; 841 Sunday-schools; 14,419 officers and teachers; 113,550 scholars; contributions \$1,515,030; value of church property \$11,258,904.

The Congl. Churches reported 1889: 204 ministers; 264 churches; 20,151 families; 40,336 members; 45,853 Sunday-school officers, teachers, and scholars; contributions \$490,870.

The Free-Will Bapt. Church reported 1890: 6 yearly meetings; 150 churches; 135 ministers; 8,957 members.

The Univ. Church reported 1890: 166 parishes; 6,929 families; 126 churches; 152 church edifices; 6,937 members; 113 Sunday-schools; 8,435 scholars; 3 educational institutions; church property valued at \$1,794,950.

At the sixth international Sunday-school convention, at Pittsburg, 1890, June 24-27, there were reported in N. Y. 7,193 Sunday-schools, 108,272 officers and teachers, and 979,415 scholars; total members 1,087,687.

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Education.—In 1895 N. Y. had an estimated school population (5-18 years) of 1,570,000, of whom 1,158,343, or 74.1 per cent. were enrolled during the year; average daily attendance 757,694, or 65 per cent. of the number enrolled; average number of days taught 176; aggregate school days given 139,794,981, or 121 for each pupil enrolled. There were 35,624 teachers employed (5,476 males, 30,148 females); schoolhouses 11,985, value \$53,400,016; school receipts from permanent funds \$168,870, from taxation \$17,722,694, other sources \$3,473,141, total \$21,226,147; expenditures, for sites and buildings \$5,494,199, salaries \$12,908,835, other purposes \$2,543,095, total \$20,946,129. The private schools had 165,860 pupils enrolled, making a total enrolment, public and private, of 1,324,203. Public high schools (1895) numbered 332, with 1,334 teachers, 32,489 secondary students (13,626 males, 18,863 females), and 110,614 students below secondary grades (53,778 males, 56,836 females); there were 4,081 preparing for college, 3,515 graduated during the year, of whom 851 were college preparatory; 315 schools reported 358,792 vols. in libraries, total income from all sources (296 reporting) \$1,396,750. Private secondary schools numbered 204, instructors 1,125, secondary students 11,194 (5,479 males, 5,715 females), elementary students 11,943 (5,636 males, 6,307 females); preparing for college 3,249, graduates during the year 1,434, of whom 699 were college preparatory; 150 schools reported 259,853 vols in libraries, total income from all sources (122 reporting) \$1,257,238. Public normal schools numbered 14 in 1895, with 239 teachers for normal students and 81 teachers for other departments; students in normal department 5,226 (945 males, 4,281 females), others in secondary grades 2,049 (93 males, 1,956 females), elementary pupils 2,848 (1,282 males, 1,566 females); normal graduates during year 975 (122 males, 853 females); income from public appropriations \$360,111, tuition fees \$19,008, productive funds \$1,922, other sources \$39,922, total \$420,963; 10 schools reported 35,172 vols. in libraries. These normal schools were located as follows: Albany, Brockport, Brooklyn, Buffalo, Cortland, Fredonia, Geneseo, New Paltz, New York, Oneonta, Oswego, Plattsburg, Potsdam, and Syracuse. In 1902 colleges for men 17, with 3,649 students; coeducational colleges 6, with 3,243 students; colleges for women, 4, with 1,326 students; total 27 colleges, 8,218 students (6,042 males, 2,176 females). These schools were as follows: Alfred University (Seventh Day), Alfred; St. Bonaventure's (R. C.), Allegany; St. Stephen's (P. E.), Annandale; Polytechnic Institute (non-sect.), St. Francis (R. C.), St. John's (R. C.), all of Brooklyn; Canisius (R. C.), Buffalo; St. Lawrence (Univ.), Canton; Hamilton (non-sect.), Clinton; Hobart (P. E.), Geneva; Colgate (Bapt.), Hamilton; Cornell University (non-sect.), Ithaca; St. Francis Xavier (R. C.), College of the City of New York (non-sect.), Columbia University (non-sect.), Manhattan (R. C.), St. John's (R. C.) University of the City of New York (non-sect.), all of New York; Niagara University (R. C.), Niagara; University of Rochester (Bapt.), Rochester; Union University (non-sect.), Schenectady, Syracuse University

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(M.E.), Syracuse. For women: Wells (non-sect.), Aurora; Elmira (Presb.), Elmira; Barnard (non-sect.), New York; Vassar (non-sect.), Poughkeepsie. Among the professional schools were: Rensselaer Polytechnic Institute, Troy; U. S. Military Academy, West Point; Auburn Theological Seminary (Presb.), Auburn; German Martin Luther Seminary, Buffalo; Canton Theological Seminary (Univ.), Canton; Harwick Seminary (Luth.), Harwick; General Theological Seminary (P. E.), Union Theological Seminary (Presb.), New York.

For deaf-mutes there were seven institutions: at Buffalo, Fordham, Malone, New York (2), Rochester, Rome; for the deaf three, at Albany and New York (2); for the blind two, at Batavia and New York; for the feeble-minded four, at Newark, New York, Syracuse, and Amityville; reform schools eight, at Brooklyn, Canaan Four Corners, Elmira, New York (3), Rochester, and Westchester.

Illiteracy.—Of the entire population of N. Y. in 1890, 10 years of age and over, there were 4,822,392, of whom 266,911, or 5.5 per cent., were illiterate; males, total 2,385,622, illiterate 124,443, or 5.2 per cent.; females, total 2,436,770, illiterate 142,468, or 5.8 per cent.; white population 10 years of age and over 4,760,282, illiterate 255,498, or 5.4 per cent.; native white, total 3,248,761, illiterate 57,362, or 1.8 per cent.; foreign white, total 1,511,521, illiterate 198,136, or 13.1 per cent.; colored population 10 years of age and over 62,110, illiterate 11,413, or 18.4 per cent.

Finances and Banking.—General: in 1890 N. Y. had a net state debt of \$2,308,230, county debt \$10,936,638, municipal \$187,348,163, school-district \$1,170,186; cash and productive assets held by the state \$17,415,812, of which \$5,426,609 was cash and \$11,989,203 stocks, bonds, and other securities; annual interest charge on debt \$12,800,176, which is 5.01 per cent. on the debt and \$2.13 per capita. The assessed value of real estate was \$3,403,751,246, or 44.14 per cent. of the true value (\$5,250,687,180), personal property \$382,159,067, total assessed value \$3,785,910,313, *ad valorem* taxation \$75,126,502, or \$1.98 per \$100 of assessed valuation; true value of all real estate with improvements \$5,817,704,667, farm stock and machinery \$171,183,430, mines and quarries \$30,513,948, mill machinery and products on hand \$594,476,039, railroads and equipments \$534,671,937, telegraphs, telephones, shipping, and canals \$129,098,710, total all property \$1,445,285,114. In 1890 the receipts were: state \$13,119,595, counties \$8,291,385, municipalities \$63,341,359, schools \$6,475,000, total \$91,177,339; expenditures: state \$9,520,564, counties \$8,923,007, municipalities \$53,070,197, school districts \$17,392,274, total \$91,232,042.

Real-estate mortgages to the number of 579,472 were in force in 1890 amounting to \$1,607,874,301, on acres 156,814, amount \$217,813,055, on lots 422,658, amount \$1,390,061,246; annual interest charge on acres \$12,589,595, on lots \$75,758,338, total \$88,347,933, or an average rate of 5.49 per cent. In 1893 the state debt was practically wiped out, having been paid at the rate of \$1,000,000 per year for

the 11 years preceding. At the November election in 1895 it was voted to issue bonds to enlarge and improve the Erie, Champlain, and Oswego canals. Up to Sep. 1, 1897, \$5,770,000 had been issued, but \$500,000 had been cancelled from the proceeds of a tax levied for a sinking fund, leaving \$5,270,000 outstanding which with \$495,000 of controller's certificates made a total state debt of \$5,765,000.

The total public debt of the state on 1902, Sept. 30, was \$9,920,660. The debt consisted of canal bonds, public defense bonds, and Adirondack Park bonds. In 1902 the equalized valuation amounted to \$5,754,400,382; divided as follows: Real estate, \$5,169,308,070, and personal property \$585,092,312. The tax rate was \$0.13 per \$1,000, and the total tax levied was \$748,072.

On June 30, 1902, N. Y. had 353 nat. banks in operation, of which 267 reported \$93,745,613 of loans and discounts outstanding, only \$9,102,593 being secured by bonds and mortgages; capital stock of all the national banks operating \$86,646,060, U. S. bonds on deposit \$43,277,950, circulation outstanding \$42,205,787. In 1895-6 the state banks had 1,695,787 depositors with \$691,764,504 deposits, or an average of \$408 per depositor. In 1894, 36 loan and trust companies reported \$17,451,671 loans on real estate, \$147,794,023 loans on collaterals, \$11,575,000 U. S. bonds, \$54,422,530 other bonds and stocks, \$341,466,011 total resources, \$28,350,000 capital stock, and \$38,312,202 surplus. Private banks (23 in number) had \$545,677 loans on real estate, \$723,208 loans on collaterals, \$2,081,294 other loans, \$5,717,985 total resources, \$1,374,400 capital, and \$475,961 surplus. The entire banking capital of N. Y. (1894) was \$149,580,170, national banks \$87,271,060, state \$32,584,710, private \$1,374,400, loan and trust companies \$28,350,000. On 1902, Oct. 31, there were 356 national banks in operation, with an aggregate capital stock of \$127,117,340, \$67,005,650 in U. S. bonds on deposit, and \$71,945,842 in outstanding circulation. There were also 217 State banks, with \$28,066,200 in capital and \$18,776,735 in surp., 471 priv. banks, \$77,790,403 in cap, \$4,247,743 in surplus; 127 savings banks, with \$113,286,775 in surplus and \$1,191,330,573 in resources; and 69 loan and trust companies, with \$47,825,000 in capital and \$73,073,970 in capital. The exchanges at the various clearing houses in the year ending 1902, Sept. 30, were as follows: New York, \$74,753,189,436; Buffalo, \$277,044,907; Rochester, \$130,778,746, and Albany \$183,815,691, giving a total of \$75,344,828,780.

Insurance companies, fire and marine: 1890, Feb. 19, the supt. of the insurance department reported 55 N. Y. joint-stock fire and fire-marine companies, with cap. \$20,124,020, assets \$62,728,087, liabilities excepting scrip and cap. \$27,296,978, income \$30,397,949, losses paid \$16,869,950, surplus \$14,797,337, risks in force \$4,950,448,060; 8 N. Y. mutual fire companies, resources \$2,683,170, cash liabilities \$956,831, income \$1,345,668, losses paid \$899,243, risks in force \$142,769,733; 76 joint-stock fire and fire-marine companies of other states, cap. \$40,008,600, assets \$105,999,271, liabilities excepting scrip and cap.

\$40,076,473, income \$46,808,742, losses paid \$27,061,458, surplus \$25,963,603, risks in force \$4,712,430,315; 1 mutual fire company of another state, assets \$564,475, liabilities \$321,449, income \$356,410, losses paid \$200,511, risks in force \$45,282,920; 22 foreign fire companies, deposit cap. \$4,400,000, assets \$44,862,466, liabilities \$25,628,972, income \$30,411,140, losses paid \$19,296,991, surplus \$14,833,494, risks in force \$4,015,853,729; 12 foreign marine companies, assets \$5,041,658, liabilities \$942,766, income \$2,965,261, losses paid \$1,241,121, surplus \$4,098,893, risks in force \$53,604,082; 3 N. Y. marine companies, scrip and cap. \$7,741,150, assets \$13,022,136, liabilities excepting scrip and cap. \$3,662,780, income \$4,909,664, losses paid \$2,942,909, surplus \$1,618,206, risks in force \$122,352,515; and 3 marine companies of other states, scrip and cap. \$2,613,005, assets \$4,516,794, liabilities excepting scrip and cap. \$1,000,142, income \$2,098,907, losses paid \$1,531,061, surplus \$903,647, risks in force \$48,040,181—total 162 fire and fire-marine and 18 marine companies, with aggregate assets \$216,881,436 and risks in force \$14,090,781,535, an average of \$1.54 of assets for every \$100 insured. *Insurance companies, life and casualty*: 30 life companies, cap. \$5,108,500, assets \$696,943,721, reserve \$602,718,351, other liabilities \$7,480,344, income \$168,184,699, surplus \$86,745,026, policies in force 1,139,894, insurance in force \$3,144,677,311; 4 industrial companies, policies in force 3,276,965, amount insured \$355,500,467; and 10 fidelity and casualty companies, cap. \$3,554,600, assets \$9,779,577, liabilities \$4,409,006, income \$6,881,064, losses paid \$2,216,118, surplus \$1,409,590, risks in force: accident \$516,476,089, steam-boiler \$235,566,457, fidelity \$129,394,717, plate-glass \$23,730,478—total \$905,167,741. *Insurance companies, co-operative*: certificates in force previous year 1,004,610, issued during year 335,918, total 1,340,528; terminated during year 215,482, in force at end of year 1,125,046; received from members \$30,473,047, other sources \$654,561, total \$31,127,608; claims paid \$24,015,429, expenses \$5,004,329, total \$29,019,758. The aggregate cap. of all insurance companies was \$75,494,320, assets \$951,065,652, liabilities excepting cap. \$717,346,643, surplus \$158,224,689, and risks in force \$18,498,455,916. For the protection of policy-holders and in accordance with the insurance laws, the supt. of the insurance dept. held the following deposits of companies: N. Y. joint-stock fire (special reserve fund) \$2,355,001; N. Y. life insurance \$1,568,770; N. Y. casualty \$601,973; N. Y. assessment \$326,705; foreign fire \$6,535,383; foreign marine \$2,200,000; foreign life \$302,615; foreign casualty \$400,000—total \$14,290,448.

History.—Juan de Verazzano (q.v.), who discovered the bay of New York 1524, is believed to have been the first white person within the present limits of the state. The second discovery was by Samuel Champlain, who ascended the St. Lawrence river, and 1609, July, entered the lake that bears his name. The third, and the one from which the settlement of the region by the whites

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is generally reckoned, was by Hendrik or Henry Hudson, who entered the bay of New York 1609, Sep. 9, and the river that bears his name three days afterward. As he was in the employ of the Dutch E. India Co. at the time, the country discovered by him was claimed by Holland and named New Netherlands. On his return, he narrated his adventures and described the portion of the new country that he had seen; and within a few months (1610), a vessel was dispatched from Amsterdam to seek trade with the American natives. These, in the vicinity of New York and Long Island, belonged to tribes of the Algonquin family, the Indians farther n. being Iroquois federated under the name of the Five Nations. The members of the first trading expedition spent much time in exploration, and became acquainted with the coast regions of Long Island, the present East river, the Sound, the Hudson river, N. J. coast, and a portion of the Delaware river. They were evidently sufficiently pleased with the new country to desire to remain, for they built two trading forts on the Hudson and several dwellings on Manhattan Island. Reports sent home by this party further excited the interest of the Dutch in the new country; and, spurred by this interest, the states-general (1614) voted special privileges to any company that would open and maintain trade with the natives, and the same year fitted out an expedition to promote exploration. The United New Netherlands Co. was organized under the authority of the states-general, and virtually had possession of the unoccupied territory between Canada and Va., till the expiration of their grant. The states-general refused them a renewal, and 1621 incorporated the Dutch W. India Co., which took possession of New Netherlands the following year, though the former co. continued trading for several years. The new co. erected Fort Nassau on the Delaware river and Fort Orange on the Hudson (site of Albany) 1623, and settled agricultural colonies at Fort Orange and on the w. coast of Long Island. The following year, Peter Minuit was appointed, by the states-general, director-gen. of New Netherlands, and on his arrival bought the entire island of Manhattan from the Indians for \$24. In 1629 the Dutch W. India Co. decided to offer manorial possessions to all who might desire to purchase them; and under this act several very extensive tracts of land were sold to wealthy Hollanders. In 1633 Wouter van Twiller succeeded Minuit; and during his four years' administration he settled a new colony on the Connecticut river (site of Hartford), built a fort there, and greatly promoted the interests of all the colonists and of the co. Willem Kieft followed as director-gen.; and during his eight years of office the colonists experienced their first serious trouble with the Indians, and witnessed the beginning of the long and bitter struggle with the English colonies on Long Island and in Conn. for possession of the country. Kieft's successor, Petrus Stuyvesant, assumed direction of affairs at a critical time: but his firmness and sense of justice enabled him

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to make peace with the Indians, though they had been exasperated to war by a wanton attack on several of their villages, in which more than 100 of their people had been massacred by the Dutch, under Kieft's orders. The settlement of the Indian war left Stuyvesant free to watch the English colonists on the Connecticut and the Swedes who had settled on the Delaware, while undertaking to administer public affairs more systematically. In 1655 he seized the Swedish territory and annexed it to New Netherlands. In 1664, Mar., Charles II. granted to his brother, the Duke of York, all the territory between the Connecticut and Delaware rivers; and in Aug. following, the English, under Col. Nicolls, marched upon New Amsterdam and demanded its immediate surrender, though there had been no declaration of war or other warning. As Stuyvesant was completely surprised, and wholly unprepared to contest the demand, he was compelled to comply.

On gaining possession of the country, the English changed the name of New Amsterdam to New York, and the new name was applied to the whole province also. In 1673, Aug., the Dutch recaptured the colony, but held it only till the following Feb., when it was restored to the English by treaty. In 1688 the province, with that of New England, was placed under the administration of Edmund Andros, with Francis Nicholson as lieut. gov.; 1689 Nicholson's harshness led to an insurrection, in which the govt. was seized and administered in the name of William and Mary by Jacob Leisler for two years; the same year the Five Nations invaded Canada, in revenge for a French expedition into the Seneca country from Canada, and slew more than 1,000 French settlers; 1690, Feb. 9, Schenectady was burned and nearly all its people killed by French and Canadian Indians; 1693 a French expedition attacked the Mohawks and captured many prisoners, but lost nearly all its members by cold before regaining Canada; and 1697, on the conclusion of peace between France and England, Gov. Frontenac of Canada determined to punish the Five Nations, but was prevented by the royal gov. of N. Y., Lord Bellamont. 1702-13 there were numerous border skirmishes. In 1731 the French built a fort at Crown Point on Lake Champlain, and 1731-54 built several others on Lake Champlain, the St. Lawrence river, and at Niagara. The English, in the mean time, had established fortified posts on the Hudson (Fort Edward) and on Lake Ontario (Oswego), besides Fort William Henry on Lake George. In 1755 the campaign of the English against the French was begun by Sir William Johnson marching a strong force against Crown Point. He was attacked by the French, under Dieskau, at the head of Lake George, and nearly annihilated them. The following year the French captured and destroyed Oswego; 1757 the French took Fort William Henry, and with their Indian allies massacred almost all its garrison after the surrender; 1758 Abercrombie was defeated in an attack on Ticonderoga, and Col. Bradstreet captured Fort

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Frontenac; 1759 Niagara was taken by Gen. Prideaux and Sir William Johnson, and the French abandoned Ticonderoga and Crown Point on the advance of the English, and gave up the struggle for possession of the province.

In the events directly preceding the revolutionary war, the people of N. Y. took a prompt and conspicuous stand. In 1775, May, Ethan Allen's 'Green Mountain Boys,' from Vt., captured Ticonderoga and Crown Point; in Oct., Tryon, the last royal gov., was driven to refuge on an English war-vessel; 1776, Feb., a patriot force seized New York; July 9 the provincial congress reassembled at White Plains, and approved the Declaration of Independence; and Aug. 27 following, the Americans were defeated in the battle of Long Island, and soon afterward the British occupied New York. In 1777 Burgoyne marched into the province from Canada; and though a co-operating force was sent him from New York, and several forts on the Hudson and Lake Champlain fell into his possession, he was forced to surrender at Saratoga Oct. 17. The Indians joined the English and greatly harassed the Americans till 1779, when a force under Gen. Sullivan invaded their country and destroyed their villages; but they subsequently laid waste the Schoharie and Mohawk region. Near New York were engagements at Harlem Heights and White Plains, and the Americans surrendered Forts Washington and Lee on the Hudson prior to the march through N. J. The British evacuated New York 1783, Nov. 25.

The first constitution of the state was adopted 1777, Apr. 20; the first gov. under it was Gen. Clinton, who served till 1795; the Articles of Confederation were ratified 1778, Feb.; the Federal Constitution was adopted 1788, July 26; and Albany was made the capital 1797. The state constitution was revised 1801, 21, and 46; considerably amended 1869 and 74; and by a thorough revision (1894) became virtually a new instrument.

During the second war with England (1812-15) the people of N. Y. were engaged in some of the most important battles on land and sea, and several notable conflicts occurred on the n. and n. w. frontier. During the civil war the state furnished 455,568 troops to the federal armies, and paid \$40,000,000 in bounties to her volunteers.

Government.—The executive authority is vested by the constitution (1846, with amendments 1869 and 1874) in a gov., elected for 3 years, salary \$10,000 per annum and residence; a lieut.gov., elected for 3 years, salary \$5,000 per annum; and sec. of state \$5,000, treas. \$5,000, comptroller \$6,000, atty.gen. \$5,000, a state engineer and surveyor \$5,000, supt. of public instruction \$5,000, supt. of insurance \$7,000, deputy supt. of insurance \$4,500, supt. of banking dept. \$5,000, supt. of state prisons, \$6,000, supt. of public works \$6,000—each elected for 2 years. There are also 3 state assessors, \$2,500 each, 3 railroad commissioners, \$8,000, canal board, commissioner of the new capitol, \$7,000, 3 civil-

service commissioners, \$2,000, state board of arbitration and mediation, state forest commission, state board of pharmacy, factory inspector, agent for discharged convicts, board of equalization, board of health, commissioners of the land office, of claims, fisheries, quarantine, emigration, labor statistics, lunacy, and state survey, and commissioners of the international Niagara Park. The gov. must be a citizen of the United States, at least 30 years old, and have been for 5 years next preceding his election a resident within the state. He has the veto power, but a bill may be passed over his veto by a vote of two-thirds of both houses. The lieutenant-gov. must possess the same qualifications as the gov., preside over the senate, with a casting vote only therein, and assume all the functions of the gov. in case of the impeachment, death, or other disability of that officer. The legislative authority is vested in a general assembly, comprising a senate of 32 members, elected for 2 years, and a house of representatives of 128 members, elected for 1 year, salary of each \$1,500 per annum and 10 cts. mileage. The judicial authority is vested in a court of appeals of 7 judges, the chief judge and 6 associate judges, elected for 14 years, salary chief-justice \$7,500 and \$2,000 for expenses per annum, associate justices \$7,000 and \$2,000 (expenses) each; a supreme court of 34 judges, 5 of whom reside in New York, 5 in the second judicial district, and 4 in each of the other districts; courts of oyer and terminer in each co., composed of a judge of the supreme court, the co. judge, and 2 justices of the peace (excepting in New York City, q.v.); courts of sessions in each co., composed of the co. judge and two justices of the peace; co. courts, presided over by a single judge, elected for 6 years, who also acts as surrogate in cos. with less than 40,000 population; mayors' courts in specified cities; recorders' courts in specified cities; justices of the peace; and several courts established exclusively for New York city and county. There were (1889, Dec. 21) 3,347 post-offices in N. Y., of which 11 were first-class, 61 second, 165 third, 237 presidential, 3,110 fourth, 561 money-order offices, 39 money-order stations, and 12 postal-note offices.

The successive govts., with their terms of service, are as follows: *Dutch*: Peter Minuit 1624-33; Wouter van Twiller 1633-37; Willem Kieft 1637-47; Petrus Stuyvesant 1647-64. *English*: Richard Nicolls 1664-67; Francis Lovelace 1667-73. *Dutch*: Anthony Colve 1673-4. *English*: Edmund Andros 1674-83; Thomas Dongan 1683-88; Edmund Andros 1688-9; Jacob Leisler 1689-91; Henry Sloughter 1691; Richard Ingolsby 1691-2; Benjamin Fletcher 1692-98; Richard, Earl Bellamont, 1698-1701; John Nanfan 1701-2; Lord Cornbury 1702-08; John, Lord Lovelace, 1708-9; Richard Ingolsby 1709-10; Robert Hunter 1710-19; Peter Schuyler 1719-20; William Burnett 1720-28; John Montgomerie 1728-31; Rip van Dam 1731-2; William Crosby 1732-36 (the 9 last, excepting Schuyler and Van Dam, were also govts. of N. J. at the same time); George Clarke 1736-43; George Clinton

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1743-53; Sir Danvers Osborne 1753; James De Lancey 1753-55; Sir Charles Hardy 1755-57; James De Lancey 1757-60; Cadwallader Colden 1760-1; Robert Markton 1761; Cadwallader Colden 1761-65; Sir Henry Moore 1765-69; Cadwallader Colden 1769-70; John, Lord Dunmore, 1770-1; William Tryon 1771-77. *Constitutional*: George Clinton 1777-95; John Jay 1795-1801; George Clinton 1801-04; Morgan Lewis 1804-07; Daniel D. Tompkins 1807-17; De Witt Clinton 1817-22; Joseph C. Yates 1822-24; De Witt Clinton 1824-28; Nathaniel Pitcher 1828-9; Martin Van Buren 1829; Enos T. Throop 1829-33; William L. Marcy 1833-38; William H. Seward 1838-42; William C. Bouck 1842-44; Silas Wright, Jr., 1844-46; John Young 1846-49; Hamilton Fish 1849-51; Washington Hunt 1851-53; Horatio Seymour 1853-55; Myron H. Clark 1855-57; John A. King 1857-59; Edwin D. Morgan 1859-63; Horatio Seymour 1863-65; Reuben E. Fenton 1865-69; John T. Hoffman 1869-73; John A. Dix 1873-75; Samuel J. Tilden 1875-77; Lucius Robinson 1877-80; Alonzo B. Cornell 1880-83; Grover Cleveland 1883-85; David B. Hill (act'g) 1885-6; David B. Hill 1886-92; Roswell P. Flower 1892-96; Levi P. Morton 1896-97; Frank S. Black, 1897-99; Theodore Roosevelt, 1899-1901; Benjamin B. Odell, 1901-05.

Counties, Cities, and Towns.—N. Y. is divided into 60 counties, and had (1890) 30 cities. In 1880 the most populous counties were: New York 1,206,299; Kings 599,495; Erie 219,884; Albany 154,890; Monroe 144,903; Onondaga 117,893; Oneida 115,475; Rensselaer 115,328; Westchester 108,988; Queens 90,574; Orange 88,220; St. Lawrence 85,997; and Ulster 85,838. The leading cities and towns were: New York 1,206,299; Brooklyn 566,663; Buffalo 155,134; Albany 90,758; Rochester 89,366; Troy 56,747; Syracuse 51,792; Utica 33,914; Auburn 21,924; Oswego 21,116; Elmira 20,541; Poughkeepsie 20,207; Cohoes 19,416; Yonkers 18,892; Kingston 18,344; Newburg 18,049; Binghamton 17,317; Schenectady 13,655; Lockport 13,522; Rome 12,194; Watertown 10,697; Amsterdam 9,466; Jamestown 9,357; Ithaca 9,105; and Saratoga Springs 8,421. Owing to differences between the gov. and legislature, no state census was taken 1885. The cities are: Albany, Amsterdam, Auburn, Binghamton, Brooklyn, Buffalo, Cohoes, Dunkirk, Elmira, Hornellsville (incorporated 1888), Hudson, Ithaca (1888), Jamestown, Kingston, Lockport, Long Island City, Middletown (1888), Newburg, New York, Ogdensburg, Oswego, Poughkeepsie, Rochester, Rome, Schenectady, Syracuse, Troy, Utica, Watertown, and Yonkers. In 1890 the most populous cities were: New York 1,515,301; Brooklyn 806,343; Buffalo 255,664; Rochester 133,896; Albany 94,923; Syracuse, 88,143; Troy, 60,956.

Politics.—State, congressional, and presidential elections are held on Tuesday after the first Monday in Nov. The qualifications of the electors are: Every male citizen of the age of 21 years, who shall have been a citizen for 10 days and an inhabitant of the state one year next preceding any election, and for the last 4 months a

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resident of the co., and for the last 30 days a resident of the election district in which he may offer his vote, shall be entitled to vote at such election in the election district of which he shall at the time be a resident, and not elsewhere, for all officers that now are or hereafter may be elective by the people, and upon all questions which may be submitted to the vote of the people. Election betters and bribers, and convicts, are excluded from voting. A modified form of the Australian ballot system was adopted by the legislature and approved 1890, May 2. The state government (1897) is republican in gov. and principal officers and in the legislature, with a party majority of 20 in the senate, 56 in the house, and 76 on joint ballot. N. Y. has 36 electoral votes. Her votes for pres. and vice-pres. have been as follows: 1792, George Washington and George Clinton 12; 1796, John Adams and Thomas Pinckney; 1800, Thomas Jefferson and Aaron Burr; 1804, Thomas Jefferson and George Clinton 19; 1808, James Madison 13 and George Clinton 6 for pres., and George Clinton 13, James Madison 3, and James Monroe 3, for vice-pres.; 1812, De Witt Clinton and Jared Ingersoll 29; 1816, James Monroe and Daniel D. Tompkins; 1820, James Monroe and Daniel D. Tompkins; 1824, John Quincy Adams 26, William H. Crawford 5, Andrew Jackson 1, and Henry Clay 4, for pres., and John C. Calhoun 29 and Nathan Sanford 7 for vice-pres.; 1828, Andrew Jackson 20 and John Quincy Adams 16 for pres., and John C. Calhoun 20 and Richard Rush 16 for vice-pres.; 1832, Andrew Jackson and Martin Van Buren 42; 1836, Martin Van Buren and Richard M. Johnson; 1840, William H. Harrison and John Tyler; 1844, James K. Polk and George M. Dallas 36; 1848, Zachary Taylor and Millard Fillmore; 1852, Franklin Pierce and William R. King 35; 1856, John C. Fremont and William L. Dayton; 1860, Abraham Lincoln and Hannibal Hamlin; 1864, Abraham Lincoln and Andrew Johnson 33; 1868, Horatio Seymour and Francis P. Blair, Jr.; 1872, U. S. Grant and Henry Wilson 35; 1876, Samuel J. Tilden and Thomas A. Hendricks; 1880, James A. Garfield and Chester A. Arthur; 1884, Grover Cleveland and Thomas A. Hendricks 36; 1888, Benjamin Harrison and Levi P. Morton 36; 1892, Grover Cleveland and Adlai E. Stevenson 36; 1896; Wm. McKinley and Garret A. Hobart, 36; 1900, Wm. McKinley and Theodore Roosevelt 36.

Population.—(1790) white 314,142, free colored 4,654, slaves 21,324, total 340,120; (1800) white 557,731, free colored 10,417, slaves 20,903, total 589,051; (1810) white 918,699, free colored 25,333, slaves 15,017, total 959,049; (1820) white 1,332,744, free colored 29,279, slaves 10,088, total 1,372,111; (1830) white 1,873,663, free colored 44,870, slaves 75, total 1,918,608; (1840) white 2,378,890, free colored 50,027, slaves 4, total 2,428,921; (1850) white 3,048,325, free colored 49,069, total 3,097,394; (1860) white 3,831,590, free colored 49,005, total 3,880,735; (1870) white 4,330,210, colored 52,081, total 4,382,759; (1880) white 5,016,022, colored 66,849, total 5,082,871; (1890) 5,994,044; (1900) 7,268,894.

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NEW YORK, THE CITY OF: a city, the commercial and financial metropolis of the United States; at the mouth of the Hudson river, and on the western outlet from Long Island Sound to the Atlantic. By virtue of its charter enacted by the legislature of the state 1897, Apr. 13, and announced as signed by the governor May 5, and to go into effect 1898, Jan. 1, 'The City of New York' on the date last mentioned entered on a new epoch in its history, with boundaries greatly extended and with immense addition to its population. The city previously had comprised, besides Manhattan island, the three islands in the East river, Blackwell's, Ward's, and Randall's (about 300 acres in all), used for purposes of charity, reform, and correction; also, mostly since 1874, the part of the mainland formerly in Westchester co. northward between the extremity of Manhattan island and the city of Yonkers. The three islands, of about 100 acres in all, in the upper bay—Governor's, Ellis's, and Bedloe's (now Liberty island)—had been ceded to the federal govt. for public uses. The last two of these islands had been shown by a rearrangement of the boundary 1889 to have been within the limits of N. J.

The following shows the total area, with pop. by state census 1892, included in The City of New York from the beginning of 1898:

Cities, etc.	Area, Sq.M.	Pop.	Cities, etc.	Area, Sq.M.	Pop.
New York.....	38.85	1,801,739	Long Island City.	7.14	30,506
Brooklyn.....	77.51	995,276	Newtown	21.32	.....
Richmond co... (Staten Island)	57.19	53,452	Jamaica Bay....	25.63	.....
Flushing	29.65	19,803	East Chester	50.00	35,000
Hempstead..... (part)	17.86	17,756	West Chester }		
Jamaica	33.50	14,441	Pelham		
			Totals.....	359.75	2,985,422

Harbor.—N. Y. has two bays—the lower or maritime bay, and the upper or the harbor—which are connected by a strait less than 1 m. wide, formed by the shores of Long Island and Staten Island, and known as the Narrows. This entrance to the upper bay is defended by two forts—Hamilton, on the Long Island shore, 47 ft. above low water; and the united works on the Wadsworth reservation on Staten Island, which comprise Fort Wadsworth proper, a triple casemate of granite, Fort Tompkins, on the crest of the hill, and Battery Hudson and a long line of water-batteries. Approach to the city from Long Island Sound is defended by Fort Schuyler, on Throgg's Neck, at the junction of the East river with the Sound, and by the supporting works opposite, at Willet's Point. Within the upper bay, 1,000 yards from the extreme s. point of the city, or the Battery, and 6 m. n. by e. of the Narrows, is Governor's Island, on which are Fort Columbus, a stone work at

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the centre of the island, Castle William, a stone work with three tiers of casemates, finished 1811, on the n.w. point, and the South Battery, a triangular work on the s. A part of the island is occupied by the ordnance dept. as the New York arsenal, and another part as the headquarters of the U. S. milit. dept. of the Atlantic. The sites of the old Forts Washington (175th st.), George (1 m. from the n. end of Manhattan Island, on the e. side), and Lee (on the Palisades of the Hudson) are now occupied by residences and pleasure-grounds. The harbor of N. Y. is one of the most commodious and attractive in the world, and is alive with craft day and night, the year round. Bedloe's, now known as Liberty Island contains Bartholdi's colossal statute of Liberty Enlightening the World (see LIBERTY, STATUE OF); and Ellis Island, used for many years by the federal govt. as a naval powder-magazine, was selected for an immigrant depot under the jurisdiction of the U. S. treas. dept. 1890.

Streets and Parks.—The lower part of the city is laid out very irregularly, with many short and narrow streets. At Houston st. there is a beginning of regularity, and from 14th st. the modern system of straight aves. and sts. intersecting at right angles is carried out to the extreme n. limit. The avenues, which bear both names and numerals, average 100 ft. in width, with four 150 ft. wide each; and the numerical sts. average 60 ft. in width, with twenty 100 ft. wide each. Broadway extends from Battery Place n.w. 6 m., and joins the Boulevard at 78th st., after crossing five aves. First and Second aves. extend from E. Houston st. n. to the Harlem. Third and Fourth avenues are continuations of the Bowery n. to the Harlem. Fifth ave. continues West Broadway and South Fifth ave. to the Harlem at 144th st., passing through Washington Park, along the w. side of Madison sq., the e. sides of Reservoir and Central parks, and through Mt. Morris sq.; Sixth ave. n. from Carmine st.; Seventh ave. n. from Greenwich ave.; Eighth ave. n. from Hudson st.; Ninth ave. n. from Gansevoort st.; Tenth ave. n. from West st.; Eleventh ave. n. from W. 14th st.; Twelfth ave. n. from W. 30th to W. 57th streets; and Thirteenth ave. n. from W. 11th to W. 25th streets. Of the four lettered avenues (A, B, C, D) on the e. side, Ave. A is longest, extending from E. Houston st. n. to 93d st. and East river. The parks and squares, all of which, excepting Gramercy sq. (private), are under control of the dept. of public parks, comprise Abingdon sq., Battery Park, Beach st. sq., Boston Road (164th st.), Boston Road and 169th st., Bowling Green, Bryant Park, Canal st. sq., Cedar Park, Central Park, Christopher st. sq., City Hall Park, Cooper Union Park, Duane st. sq., East River Park, Five Points Park, Fulton ave. and 167th st., Fulton ave. and 170th st., Grand st. sq., High Bridge Park, Jackson sq., Jeannette Park, Madison sq., Manhattan sq., Morningside Park, Mt. Morris sq., Riverside Park, Stuyvesant sq., Tompkins

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sq., Union sq., and Washington sq. Besides these, the following new parks are being laid out rapidly, under recent authority of the legislature: Van Cortlandt Park, near the Yonkers line, 1,069 acres; Bronx Park, between West Farms and Williams Bridge, 653 acres; Crotona Park, s. of n. Third and Boston avenues, 135 acres; St. Mary's Park, Morrisania, 25 acres; Claremont Park, $\frac{3}{4}$ m. e. of High Bridge, 38 acres; and Pelham Bay Park, Long Island Sound shore-line (9 m.), including Hunter's Island, 1,700 acres. The city has also taken steps to acquire land for a park to extend from 155th st. near Tenth ave. and the Harlem river, on the east, n. to the Fort George bluff. The six other parks now being laid out all are in the annexed district, n. of the Harlem river. Broad boulevards, designated as parkways, are projected to connect Van Cortlandt and Bronx parks, Bronx and Pelham Bay parks, and Crotona and Bronx parks.

The following monuments and statues, excluding those in Central Park, are conspicuous in the public parks and squares, and in Trinity and St. Paul's churchyards: William E. Dodge, bronze statue, at Broadway, Sixth ave., and 36th st., erected by New York merchants 1885; Admiral Farragut, symbolic statue by Augustus Saint-Gaudens, at n.w. corner of Madison Sq. Park; Benjamin Franklin, heroic-size bronze statue, Printing-house sq., 1872; Giuseppe Garibaldi, heroic-size bronze statue by Turini, Washington sq., 1888; Horace Greeley, bronze statue, seated, by J. Q. A. Ward, in front of N. Y. *Tribune* office, 1890; Washington Irving, colossal bronze bust by Beer, Bryant Park, 1866; Gen. Lafayette, bronze statue by Bartholdi, Union sq., opposite Broadway, 1876; Abraham Lincoln, heroic-size bronze statue by H. K. Brown, s.w. corner of Union sq., 1868; William H. Seward, bronze statue by Randolph Rogers, s.w. corner of Madison sq., 1876; George Washington, heroic equestrian statue by H. K. Brown, Union sq., opposite the Lincoln statue; a second of Washington, on the steps of the U. S. Sub-Treas. building, the site of Federal Hall, where he took the oath as first pres., by J. Q. A. Ward, 1883; a third of Washington, copy of the Houdon statue, in Riverside Park; Maj.Gen. Worth, granite obelisk, at Broadway, 5th ave., and 25th st., 1857; 'Martyrs' Monument,' magnificent red-sandstone memorial to the American patriots who died in British prisons in N. Y. during the revolutionary war, n.e. corner of Trinity churchyard; monument to Capt. Lawrence of the *Chesapeake*, at left of entrance to Trinity Church; and monuments to Thomas Addis Emmet, below the Broadway end of St. Paul's Church, and to Maj.Gen. Montgomery, built in the exterior of the wall at the Broadway end of St. Paul's Church. The U. S. Grant tomb, on Riverside Drive and 123d st., is 160 ft. high and was dedicated 1897. A statue of Columbus was unveiled in 1892.

Central Park.—Central Park is largest, most beau-

tiful, and best-known park in the city, and one of the most attractive pleasure-grounds in the world. The establishment of a great public park in the city was suggested 1850 by Andrew J. Downing, landscape-gardener; the legislature passed an act authorizing the city to take possession of the site of the present park 1853; five commissioners were appointed by the supreme court of N. Y. to take the land formally the same year; their report was confirmed by the court after they had labored three years; and the common council passed an ordinance for the payment of \$5,160,369 for the land, \$1,657,590 of which it assessed against property adjoining that would be benefited by the improvement. In 1858, plans prepared by Frederick Law Olmsted and Calvert Vaux were accepted, and soon afterward the work of laying out the park began. The land originally comprised 776 acres; but it has been increased since by the addition of 68 acres and Manhattan sq. (18 acres), so that it now contains 862 acres. It is bounded n. by 110th st., e. by Fifth ave., s. by 59th st., w. by Eighth ave.; is a perfect parallelogram in shape, separated into the upper and the lower divisions by two Croton reservoirs; and is a little more than $2\frac{1}{2}$ m. long and a little more than $\frac{1}{2}$ m. wide. The reservoirs cover nearly 150 acres, and the wooded ground 400 acres; the carriage-ways aggregate 9 m. in length, the bridle-paths $5\frac{3}{4}$ m., walks and footpaths $29\frac{1}{2}$ m.; all the park excepting a part of the n. end, is surrounded by a stone wall; and there are 19 entrances, provided with wood gates, but designed ultimately to have ornamental arches and gates, and symbolical statuary. The following designation of the entrances indicates the character of the proposed symbolism: Scholars' Gate, Fifth ave., 59th st.; Artists', Sixth ave., 59th st.; Artisans', Seventh ave., 59th st.; Merchants', Eighth ave., 59th st.; Women's, Eighth ave., 72d st.; Hunters', Eighth ave., 79th st.; Mariners', Eighth ave., 85th st.; Gate of All Saints, Eighth ave., 96th st.; Boys', Eighth ave., 100th st.; Strangers', Eighth ave., 110th st.; Students', Fifth ave., 67th st.; Children's, Fifth ave., 72d st.; Miners', Fifth ave., 79th st.; Engineers', Fifth ave., 90th st.; Woodman's, Fifth ave., 96th st.; Girls', Fifth ave., 102d st.; Pioneers', Fifth ave., 110th st.; Farmers', Sixth ave., 110th st.; Warriors', Seventh ave., 110th st. The park contains numerous works of art, the most important of which are: the Terrace and its grand carvings; Cleopatra's Needle, or the Obelisk, presented to the city by the khedive of Egypt 1877; Bethesda Fountain, in the Esplanade, near the shore of the lake, bronze, designed and executed by Emma Stebbins 1864-5; Marble Arch; and the statues and busts that line the Mall, and those elsewhere located. The latter include: Fitz-Greene Halleck, bronze statue by Wilson MacDonald, erected 1877; Alexander Hamilton, granite statue, Charles Conradts, 1880; Alexander von Humboldt, bronze bust, Gustave Blaeser, 1869; Giuseppe Mazzini, bronze bust, Turini, 1878; Thomas Moore, bust, 1880; Samuel F. B.

Morse, life-size bronze statue, Pickett, 1871; the poet Schiller, bronze bust, Richter, 1859; Sir Walter Scott, bronze statue, copy of Steele's Edinburgh statue, 1872; Shakespeare, bronze statue, J. Q. A. Ward, 1872; Daniel Webster, heroic bronze statue, Thomas Ball; Ludwig Beethoven, bronze bust, 1884; Simon Bolivar, equestrian statue, De la Cora, 1884; Robert Burns, bronze statue, Steele, 1880; and the ideals—*Commerce*, bronze, 1865; *Eagles and Goat*, bronze, 1863; *Falconer*, bronze group, George Simonds, 1872; *Indian Hunter*, life-size bronze, J. Q. A. Ward; *The Pilgrim*, heroic-size bronze statue, J. Q. A. Ward; *The Still Hunt*, animal group, Kemeys; *Tigress and Young*, bronze group, Caine, 1867; and the *Seventh Regiment Memorial*, uniformed bronze figure, J. Q. A. Ward, 1872. The park contains 48 bridges, archways, and tunnels, of brick and granite, solid rock, stone and brick, stone and iron, stone and wood, and wood. The buildings number at present 30, the most important of which are: the Metropolitan Museum of Art, incomplete; the Museum of Natural History; and the old Arsenal, now containing the meteorological observatory and a part of the menagerie. Other points of interest are the Ramble, Carrousel for children, Belvedere, Casino, Ball-ground, Green, or Common, with its flock of fine sheep, the Lake, the Pond, Harlem Meer, Cave, and Lily Pond.

The Metropolitan Museum of Art (q v.), Central Park, near Fifth ave. and opposite 83d st., formally opened by the pres. of the United States 1880, Mar. 30, though showing but a small portion of the institution as it is designed to be, contains a vast amount of precious treasure. The archæological collection of more than 30,000 objects gathered in Cyprus by Gen. Di Cesnola, casts of ancient sculpture; Egyptian antiquities; terracottas and bronzes; glass, laces, and antique pottery; the Drexel collection of musical instruments; the Assyrian and Babylonian antiquities collected by William Hayes Ward, D.D.; the Douglass collection of Egyptian antiquities; and the paintings—are among the most notable collections in the world. The paintings include: Bonheur's *Horse Fair*; Meissonier's *Friedland*, 1807; Détaillé's *Defense of Champigny*; Breton's *Religious Procession in Brittany*; Kaulbach's *Crusaders before Jerusalem*; Turner's *Saltash*; Velasquez's *Don Balthazar*; Fortuny's *Spanish Lady*, Crozik's *Columbus*; Tadema's *Reading of Homer*; Rubens's *Return of the Holy Family from Egypt*; Van Dyck's *St. Martha and Miss De Christyn*; De Crayer's *Alexander and Diogenes*; Benjamin Constant's *Justinian and His Counselors*; and specimens of Rembrandt, Constable, Van Leyden, Gainsborough, Sir Joshua Reynolds, Corot, Piloty, Jordaens, Dirk and Frans Hals, the Van Ostades, Singlebach, and other masters. The American Museum of Nat. History, in the former Manhattan sq., Eighth—Ninth avenues, 77th—81st streets, was opened by Pres. Hayes 1877, Dec. 22, and is designed to become a post-graduate

priv. of nat. science. Its collections are already numerous and very full, and a dept. of public instruction is in operation there.

Buildings.—N. Y., in recent years, has added greatly to the number of its massive and imposing buildings, whether for public uses, commercial, financial, or other business purposes, benevolence, or private residence. During 1889 the erections of new buildings aggregated 3,182 and cost \$69,504,872, and the new buildings erected in the spring 1890 cost \$19,088,997. The new buildings in the lower part of the city are massive structures, many 10 and 12 stories high, designed mainly for offices; and the principal ones in the vicinity of Central Park are equally massive, nearly as high, and designed for flat or apartment residence. The most notable increase in building-operations 1880-90 is the number of flat-houses costing more than \$15,000 each, exclusive of the land. In 1889 there were 1,355 such buildings erected, at a cost of \$32,000,000, which buildings alone will accommodate an additional population of 100,000. During the same year, besides dwellings that cost more than \$50,000 each, there were erected: 238 that cost \$20,000 to \$50,000 each; 525 that cost less than \$20,000; 16 hotels; 52 stores that cost more than \$30,000 each; 45 that cost \$15,000 to \$30,000 each; 53 that cost less than \$15,000 each; 22 office buildings; 151 factories; 11 public schools; 25 churches; 5 municipal buildings; and 32 theatres. The dwelling-houses erected 1880-90 cost more than \$107,000,000; apartment and tenement houses nearly \$250,000,000, of which the apartment-houses cost three-fourths; office buildings more than \$20,000,000; stores \$3,000,000 to \$5,000,000 per annum (nearly \$6,000,000 in 1889); factories more than \$20,000,000; theatres about \$11,000,000. The leading commercial exchanges have more or less imposing buildings of their own, and comprise the Building-material, Coal and Iron, Coffee, Consolidated Petroleum, Cotton, Maritime, Metal, Produce, Real-estate, and Stock exchanges. The same is true of the principal clubs, which include the Aldine, American Jockey, Arion, Authors', Caledonian, Calumet, Catholic, Century, Coney Island Jockey, Delta Kappa Epsilon, Down-town, Electric, Fellowcraft, Freundschaft, German, Grolier, Harlem, Harmonie, Holland, Knickerbocker, Lambs', Lawyers', Liederkrantz, Lotus, Manhattan, Manhattan Athletic, Merchants', Metropolitan, New York Athletic, New York, New York Press, New York Yacht, Nineteenth Century, Progress, Psi Upsilon, St. Nicholas, Union, Union League, and University clubs.

The U. S. govt. buildings are the Sub-Treasury, Custom-house, Post-office and U. S. Court Building, Army Building, and Barge Office; the chief state building is the turreted graystone State Arsenal on Seventh ave. and 35th st.; the chief co. building is the Court-house in City Hall Park; and the principal city buildings are the City Hall (with a notable collection of portraits of

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govs., mayors, and milit. and naval officers, in the Governor's Room) and the dept. of finance in City Hall Park, police and district courts, 10 armories of the N. G. S. N. Y., 38 police stations (with headquarters), 13 new and improved markets, buildings of the fire dept., city prison and courts (the Tombs), and the charitable and reformatory institutions under control of the dept. of public charities and correction. The latter include the penitentiary, almshouse, lunatic asylum for females, workhouse, blind asylum, charity hospital, hospital for incurables, and convalescent hospital, on Blackwell's Island; the idiot asylum, nursery, children's and infants' hospital, schools and other institutions for destitute children, on Randall's Island; and the insane asylum for males and the homeopathic hospital, on Ward's Island. Randall's Island also contains the house of refuge, under control of the Soc. for Reformation of Juvenile Delinquents; and Ward's Island, the state emigrant hospital, lunatic asylum, house of refuge, and children's nursery, under control of the N. Y. Commissioners of Emigration, and a home for invalid soldiers of the civil war who belonged to city regiments. All these buildings are large, were erected for their respective uses, and were built of brick or of stone quarried on Blackwell's Island, a great part of the labor being done by convicts.

In 1903 there were more than 100 first-class hotels in the city and a number of first-class apartment houses, some of which combine the features of a hotel and an apartment house, rents ranging from \$600 to \$7,000 per annum; 45 theatres and opera houses; numerous establishments for Russian, Turkish and medicated baths, and for free public baths, open from June till Oct.; 126 hospitals of all kinds; 36 dispensaries not connected with hospitals; 2 large museums, and over 53 branch offices and 240 sub-stations of the post-office.

Bridges.—Besides the ornamental ones in Central Park, N. Y. has 13 bridges, all but one of which span the Harlem or upper arm of the East river. The most remarkable of these is the wire suspension-bridge across the East river, connecting Brooklyn at Sands st. with N. Y. at Park Row, opposite City Hall Park. The total weight of the suspended structure, river span, is 6,740 tons; maximum weight of cars, vehicles, and pedestrians that can be accommodated on the bridge at one time is 1,380 tons; the ordinary pull on the cables from these combined weights is 11,700 tons; and the ultimate strength of the cables is 49,200 tons. The bridge is 85 ft. wide and has 5 aves.—the central, an elevated promenade, 15½ ft. wide, for pedestrians; two on the sides of this, 16 ft. wide, for railroad tracks; and two outer ones, nearly 19 ft. wide, for vehicles. (For further details, see BRIDGE.) The next bridge in importance is the structure which carries the Croton aqueduct across the Harlem river and valley at 175th st., generally designated as the High Bridge. It is 1,460 ft. long, and is supported by 13 arches resting on granite piers, the crown of the highest

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arch being 116 ft. above the river. The water is conducted over in large cast-iron pipes, laid in brick masonry, and the bridge furnishes a grand and popular promenade for pedestrians. The other bridges are the Second ave., railroad; Third ave., general traffic; Fourth ave., railroad; Madison ave., extending to 138th st.; Central (formerly Macomb's Dam) Bridge, new iron; new railroad bridge between Central and High bridges; new Washington Bridge, connecting 181st st. on the island with Central ave. on the mainland; footbridge at Fordham Heights; Farmer's Bridge, 1 m. above High Bridge; King's Bridge, at junction of Harlem river and Spuyten Duyvil creek; and drawbridge at the junction of the Hudson river and Spuyten Duyvil creek. Further to facilitate rapid transit between New York and important suburban points. Two suspension bridges were being built in 1903 across the East river n. of the Brooklyn bridge; one, the new East River bridge, connects Delancey st., Manhattan, and Broadway, Brooklyn; the other, Blackwell's Island bridge, E. 60th st., Manhattan, to Charles st., Queens, passing over Blackwell's Island, and a tunnel for the same purpose under North r., connecting Jersey City and Manhattan.

Manufactures.—New York had (1890) 25,403 manufacturing establishments with a total capital employed of \$640,946,076, average number of employees 354,291, of whom 45,147 were officers, members of firms, and clerks, 227,342 operatives skilled and unskilled, and 81,802 pieceworkers; 2,063 were children; cost of materials used \$15,473,889; value of products \$777,222,721, of which \$731,626,396 were principal and \$45,595,325 by products. The table on the two pages following presents the leading industries by establishments, employees, capital, wages, materials and products by census of 1900.

Commerce.—N. Y. constitutes one U. S. customs district, and comprises two internal-revenue districts. During the fiscal year ended 1896, June 30, the exports and imports were: exports, merchandise, domestic \$344,355,492, foreign \$9,919,449, total \$354,274,941; imports, dutiable \$280,023,240, free \$219,909,552, total \$499,932,792; duty collected \$106,666,185; of gold the exports were, domestic \$100,639,311, foreign \$5,413,465, total \$106,052,776, imports \$23,217,618; of silver the exports were, domestic \$46,405,978, foreign \$1,725,590, total \$48,131,568; imports \$7,754,521. The total imports into the port of N. Y. were \$530,904,931, of which \$86,672,756 entered in American vessels, \$442,670,727 in foreign vessels, and \$1,561,448 in land vehicles; the total domestic exports were \$491,400,781, of which \$68,086,020 were shipped in American vessels and \$423,314,761 in foreign vessels; the total exports of foreign goods were \$17,058,504, of which \$4,319,144 were shipped in American vessels, \$11,066,545 in foreign vessels, and \$1,672,815 in land vehicles. Over one-half of the imports and one-third the export trade of the U. S. is carried on through this port. The imports of merchandise at the port of New York during the year 1902 aggregated in value \$591,238,600; exports, \$491,735,461. The movement in gold and silver was: Total

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Industries.	Establishments.	Employees.	Capital.	Wages.	Materials.	Products.
Artificial feathers and flowers.....	152	3,993	\$ 2,961,748	\$ 1,251,385	\$ 2,190,099	\$ 4,997,194
Blacksmithing and wheelwrighting.....	1,003	2,304	2,627,170	1,629,840	1,368,799	4,882,422
Bookbinding and blank-book making.....	239	6,270	4,383,901	2,842,609	2,560,197	7,619,155
Boots and shoes (factory).....	69	5,430	4,154,981	2,436,579	5,022,725	9,124,495
Boxes, fancy and paper.....	159	5,433	2,173,613	1,847,585	2,209,045	5,758,569
Bread and other bakery products.....	1,966	10,915	13,798,593	5,743,845	17,558,932	22,239,307
Carpentering.....	1,491	8,660	7,915,870	6,913,355	10,490,605	26,061,584
Carriages and wagons.....	233	2,425	3,627,751	1,559,750	1,409,529	4,317,872
Chemicals.....	37	877	4,437,028	479,479	3,415,137	5,266,656
Clothing, men's (custom).....	3,234	8,050	8,614,126	4,805,663	8,020,886	22,077,030
Clothing, men's (factory).....	1,889	20,406	36,842,799	15,687,104	52,489,787	103,230,201
Clothing, women's (custom).....	1,418	7,351	4,405,853	3,397,550	4,473,935	11,571,048
Clothing, women's (factory).....	1,607	44,715	27,388,909	20,929,460	54,638,897	102,711,604
Coffee and spice roasting and grinding.....	56	1,427	8,657,792	657,225	17,279,301	21,346,195
Confectionery.....	530	5,536	6,516,643	2,131,107	8,230,657	14,483,900
Cordage and twine.....	11	3,252	6,722,552	1,112,019	6,059,794	8,768,974
Electrical apparatus and supplies.....	104	4,768	8,781,700	2,362,897	5,903,203	10,851,350
Flouring and grist mill products.....	11	543	8,230,518	436,599	7,887,151	8,813,487
Foundry and machine-shop products.....	589	19,560	48,092,891	11,397,201	16,034,336	41,089,475
Fur goods.....	512	4,184	6,917,625	2,386,148	8,432,933	15,238,842
Furnishing goods, men's.....	223	7,947	7,675,454	2,845,239	11,065,190	18,716,313
Furniture, factory product.....	187	6,760	7,274,874	3,895,536	5,581,780	13,216,405
Gas, illuminating and heating.....	13	4,065	134,177,693	3,037,265	5,040,709	17,116,089
Hats and caps (not wool).....	256	4,126	2,474,510	1,896,189	4,054,872	7,932,431
Iron work, architectural and ornamental.....	175	4,205	5,333,034	2,640,962	6,175,509	11,389,721
Jewelry.....	229	2,833	5,454,165	1,901,291	5,160,102	9,712,179
Leather goods.....	113	2,826	2,685,149	1,126,209	3,414,602	6,119,864

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Industries.	Establishments.	Employees.	Capital.	Wages.	Materials.	Products.
Liquors, malt.....	89	4,825	\$65,585,624	\$3,853,523	\$ 7,638,529	\$39,105,837
Lithographing and engraving.....	94	5,474	10,658,023	3,063,777	3,296,875	9,655,798
Looking-glass and picture frames.....	215	1,244	1,234,196	670,523	1,241,745	2,961,261
Lumber, planing-mill products.....	126	3,620	5,811,731	2,094,242	5,250,541	9,290,689
Marble and stone work.....	164	3,771	5,592,977	2,880,158	3,286,559	8,984,182
Masonry, brick and stone.....	383	10,236	9,891,268	7,030,282	14,056,376	43,353,473
Millinery and lace goods.....	383	11,213	7,692,055	4,014,101	11,163,633	20,983,956
Mirrors.....	31	913	1,426,584	509,186	2,466,645	3,884,443
Musical instruments, pianos.....	95	5,664	11,371,771	3,397,522	5,560,933	12,650,905
Painting and paper-hanging.....	1,709	8,274	4,074,823	6,774,996	3,826,417	14,216,812
Paper-hangings.....	12	1,693	3,097,591	911,373	2,001,702	3,888,432
Plumbing and gas-fitting.....	1,608	8,194	5,967,588	5,770,198	10,016,830	21,194,749
Printing and publishing, book and job.....	996	12,857	19,107,954	7,701,093	7,206,921	26,484,933
Printing and publishing, newspaper.....	413	9,888	40,866,549	7,730,447	12,731,348	51,397,304
Silk and silk goods.....	68	5,536	7,073,106	2,239,419	4,714,785	9,321,354
Slaughtering and meat-packing.....	22	508	1,557,303	308,627	7,038,012	7,955,806
Soap and candles.....	50	287	4,054,753	115,410	4,529,480	7,729,792
Stationery goods.....	35	639	1,091,353	256,778	635,313	1,511,850
Steam fitting and heating apparatus.....	27	1,332	2,365,199	837,475	2,209,584	4,144,977
Tinsmithing, coppersmithing, sheet iron working.....	821	6,066	6,550,984	3,521,009	5,353,032	12,385,922
Tobacco, cigars, cigarettes.....	1,841	20,519	15,669,271	8,875,882	13,820,706	37,998,261
Umbrellas and canes.....	106	1,560	1,559,413	603,218	3,250,329	5,106,333

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imports, \$14,136,005; exports, \$80,600,862. During the year 1896 4,065 vessels of 6,552,614 tons cleared from the port of N. Y., of which 796 were American, of 1,108,542 tons, and 3,269 foreign, of 5,444,072 tons; of the American vessels 456 were sail, of 258,127 tons, and 340 steam, of 850,415 tons; of the foreign vessels 954 were sail, of 545,945 tons, and 2,315 were steam, of 4,898,127 tons. The vessels belonging to the port of N. Y. were 1,731 sailing, of 351,409 tons, 1,123 steam, 506,916 tons, 199 canal, 22,778 tons, 649 barges, 143,594 tons, total 3,707, of 1,024,697 tons. During the year ended June 30, 1896, there were 343,267 immigrants landed in the United States, of whom 263,709, or 76.82 per cent., entered through N. Y.; of the N. Y. immigrants 67,581 came from Italy, 29,450 from Russia, 21,895 from Germany, 21,782 from Austria, 21,749 from Ireland, 18,861 from Sweden, and 13,709 from England.

Railroads.—Of the numerous railroads virtually terminating in New York, but three—the New York Central and Hudson River, the New York New Haven and Hartford, and the New York and Harlem—have actual starting-points in the city; the Long Island roads start from Brooklyn; and the Baltimore and Ohio, the Central of New Jersey, the Delaware Lackawanna and Western, the New York Lake Erie and Western, the Pennsylvania, the Ontario and Western, the West Shore and Buffalo, the Lehigh Valley, the New York Susquehanna and Western, the New Jersey Southern, and their branches, have depots in N. J., reached from New York by steam-ferries across the Hudson river. There are 25 city railroad routes prescribed by law, operated by horse and cable and two elevated railroad companies, the last two being practically under the same management. The elevated railroads extend from the Battery (e.), through First, Second, and Third aves., to the Harlem river at 129th st., and (w.) through Sixth, Eighth, and Ninth aves., to the river at 155th st.—fare on either line, the entire distance or any part of it, 5 cts. During 1889 the 19 principal street railroads had gross earnings \$19,317,274; paid dividends \$2,327,760; carried 384,680,492 direct and 4,203,757 transfer passengers—total 388,884,249; had 11,987 employés; paid salaries and wages \$6,331,667; used 15,055 horses and 3,294 cars; and, by various casualties, had 25 persons killed and 126 injured on their routes.

Steamships.—There are 60 piers on the East river and 70 on the Hudson or North river, leased by the city to railroad, steamship, steamboat, and steam-ferry companies. The principal steamship lines between the city proper and various European ports are the Cunard, White Star, Guion, Inman, Anchor, National, State, North German Lloyd, and the Compagnie Générale Transatlantique, nearly all of which, in late years, have added vessels of remarkable magnificence and speed to their fleets. Some of these new ‘ocean greyhounds’ have greatly reduced the time of passage between the

continents—notably, the *Teutonic* of the White Star line (6 days, 7 hours, 3 min.); *City of New York* of the Inman line (6 days, 4 hours, 17 min.); *City of Paris*, same line, New York to Fastnet Rock (5 d., 19 h., 50 min.); and the *Majestic* of the White Star line (6 days, 10 hours, 30 min.). There are also direct steamship lines to S. and Central America, W. Indies, Windward Islands, Cuba, Mexico, and numerous domestic and foreign ports. Steamboats ply regularly to Hudson river, Long Island Sound, and N. J. coast landings, those on the New York and Albany, the Providence, and the Fall River lines being particularly large and swift, and sumptuously finished and furnished. During the summer excursion season, the city's steam flotilla is more than doubled by boats that make rapid trips to Long Branch, Manhattan Beach, Rockaway Beach, and other near-by popular coast resorts.

Religion.—In 1890, Oct., there were nearly 500 church edifices occupied or approaching completion. Excluding missions, chapels, and preaching-stations, the Prot. Episc. and Rom. Cath. churches were the most numerous, 78 each. Then followed the Meth. Episc. with 63; Presb. 53; Bapt. 42; Jewish 42; Ref. (Dutch) 24; Lutheran 20; Congl. 7; African Meth. Episc. 6; Ref. Presb. 5; United Presb. 5; Evangelical 4; Disciples of Christ 3; Universalist 3; Friends 2; Unit. 2; United Brethren 2; Swedenborgian 2; Ref. Episc. 1; and miscellaneous, comprising places of worship of congregations not in fellowship with other churches, 38. St. Patrick's Cathedral (Rom. Cath.), on Fifth ave., between 50th and 51st sts., is considered the most imposing church edifice in the United States. It was projected by Abp. Hughes 1850, planned by James Renwick, begun 1858, and dedicated 1879. It is of white marble, in the decorated or geometric style common to Europe in the 13th c., is in the form of a Latin cross, has two towers and spires, each 330 ft. high, and when completed in all its parts will have cost \$2,500,000, exclusive of gifts of memorial windows, altars, paintings, and statuary. The Prot. Episc. Church has projected a cathedral which, it is promised, will be the grandest and costliest ecclesiastical structure in the United States. An association of the church authorities was incorporated to undertake the work 1873; but little advance was made till 1889, when four designs were selected from which to choose the final one. The proposed cathedral is to occupy four times the space of St. Patrick's Cathedral, and its cost has been placed at \$6,000,000. A church edifice which has long been a centre of public attraction and interest is Trinity Church, on Broadway, at the head of Wall st. The large and valuable tract of land belonging to the corporation of Trinity Church was included in grants by the English govt. 1697 and the English colonial authorities 1705 (see JANS, ANNEKE). The first church building was erected 1697: This was rebuilt 1737, and destroyed by fire 1776. Another building was completed 1780,

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and was occupied till 1839, when it was torn down as unsafe, and the present building was finished 1846. It is of brown sandstone, in Gothic style, has a steeple, 284 ft. high, with three clock faces and a full chime of bells, contains a magnificent altar and reredos erected to the memory of William B. Astor by his sons, and (1890, Oct.) is being prepared for the erection of massive symbolic bronze doors, a gift of William Waldorf Astor, as a memorial to his father, John Jacob Astor (3d). The corporation of Trinity Church has also erected in the city a number of other church edifices, though officially designating them as chapels. Of these, the best known is St. Paul's, on Broadway, between Vesey and Fulton streets, begun 1764, completed 1766, facing toward the Hudson river, and, like Trinity, in a burying-ground containing the remains of many noted people. It is the oldest church building in the city, and contains, on opposite sides, a large, square 'governor's pew' and a 'president's pew.' The latter was occupied by George Washington after being inaugurated pres.; and by Pres. Harrison on the occasion of the centennial observance of Washington's inauguration, 1889, Apr. 30. The other chapels of Trinity Church are St. John's, Varick st., erected 1803-07; Trinity, 25th st., w. of Broadway, 1851-56; St. Chrysostom's, Seventh ave. and 39th st., 1869; St. Augustine's, Houston st., completed 1877; and St. Cornelius's, on Governor's Island. Trinity Church also maintains many industrial and parochial schools, hospital, mission-house, dispensary, kindergarten, relief bureau, seaside home for women and children, training-school for young girls in household service, and other benevolent institutions. Grace Church, on Broadway and 10th st., with its cluster of handsome white marble buildings, belongs to the second richest Prot. Episc. parish in New York, and was the special object of the large-hearted benefactions of Catherine Lorillard Wolfe. It was the church of the present bp. of New York, Henry C. Potter, D.D., LL.D. Other notable church edifices are those of the Collegiate Reformed (Dutch) Church, one of the oldest Prot. organizations on the continent, and one of the wealthiest corporations in the city. The corporation was chartered by William III. 1696, and built the 'Middle Dutch Church' on Nassau st. 1721. This afterward became the site of the post-office, which in turn gave way to a massive business structure. The corporation has churches on Fifth ave. and 29th st., and Fifth ave. and 48th st., and, till recently, on Lafayette Place; and maintains several chapels and missions. Several denominations are represented by edifices that are fine specimens of ecclesiastical architecture.

Education.—In 1895 out of a total estimated pop. of 1,900,000 there were 486,000 children of school age (5-21 years); pupils in private and parochial schools estimated at 70,500; in the public schools 247,561 (128,185 males, 119,376 females), making a total enrolment of 318,061 in both public and private schools. In the public schools the

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average daily attendance was 175,271, aggregate days of attendance 34,679,401, average number of days actually in session during the year 199; regular teachers numbered 4,468 (305 males, 4,163 females, supervising officers 247 (78 males, 247 females). The city had 149 buildings used for school purposes, with 230,664 sittings, value \$20,600,000; total receipts for the school year \$4,807,681, of which \$696,069 came from state funds and taxes, \$3,996,232 from the city and \$115,380 from other sources; total expenditures during the year \$6,200,470, of which \$1,508,169 was for permanent investments and improvements, \$3,397,035 for salaries of teachers and supervising officers, \$1,129,622 for current and incidental expenses, and \$165,644 for evening schools. In 1894 the Central Evening High School had 1,411 students.

Private academies, seminaries, and other secondary schools in 1895 numbered 52, of which five were Roman Catholic, three Episcopal, one Congregational, and the rest undenominational. There were seven universities and colleges as follows: College of St. Francis Xavier (founded 1847, R. C.); College of the City of New York (1849, non-sect.); Columbia University (1754, non-sect.); Manhattan College (1853, R. C.); St. John's College (1841, R. C.); University of the City of New York (1831, non-sect.); Barnard College (1889, non-sect.). Manual training schools numbered two: Hebrew Technical Institute, and Workingman's School, both elementary. There were two theological schools: General Theological Seminary of the Protestant Episcopal Church, and Union Theological Seminary (Presb.). Law schools numbered three, as follows: Columbia University School of Law, Law School of the University of the City of New York, and New York Law School. There were four medical schools: Bellevue Hospital Medical College, College of Physicians and Surgeons in the City of New York, University of the City of New York, Medical Department, and Woman's Medical College of the New York Infirmary for Women and Children. There was one school of pharmacy, the College of Pharmacy of the City of New York; schools for training nurses numbered 15, all connected with hospitals of the city; there were one normal college and six commercial and business colleges.

Schools for defectives and delinquents were as follows: Institution for the Improved Instruction of Deaf-mutes; N. Y. Institution for the Instruction of the Deaf and Dumb; Articulation Class, Wright-Humason School; N. Y. Institution for the Blind; School for Feeble-minded; N. Y. Juvenile Asylum; Society for the Reformation of Juvenile Delinquents; and the Wetmore Home.

Periodicals.—Excluding annuals, there were (1902) 863 periodical publications: 53 daily, 8 semi-weekly, 4 bi-weekly, 1 tri-weekly, 290 weekly, 32 semi-monthly, 428 monthly, 11 bi-monthly, and 30 quarterly.

Finances and Banking.—On Sept. 15, 1902, the 44 nat. banks in the city of N. Y. had a total capital of \$90,600,000, surplus funds \$63,500,000, undivided profits

\$34,810,578, national bank notes outstanding \$24,679,177, loans and discounts \$607,100,000; U. S. bonds \$35,935,000, stocks and securities \$91,799,039, specie \$136,900,000, legal tender notes \$47,400,000, U. S. certificates of dep. \$39,355,862. Dec. 6, 1896, the 40 state banks had a total capital of \$14,822,700, surplus funds \$11,887,700, undivided profits \$3,752,360, loans and discounts \$92,303,292, stocks, bonds, and mortgages \$7,654,286, specie \$13,051,724, U. S. notes and bank-notes \$15,511,900. On 1901, Oct. 31, there were reported for the borough of Manhattan and Bronx 43 national banks, with \$73,400,000 cap.; 40 state banks, with \$11,732,700 cap.; 26 savings banks, with \$261,627,276 in savings deposits; 18 safe deposit companies; and 38 trust companies. The Exchanges at the U. S. clearing house in N. Y. city during the year ending 1901, Sept. 30, aggregated \$77,020,672.494, an increase over previous years of \$25,056,083.930. Average exchanges per day in 1896 were \$96,232,442, balances \$6,043,571. The total funded debt of the city on Sep. 1, 1897, was \$210,537,799, sinking fund \$81,874,897, net debt \$128,662,902, revenue bonds \$26,226,578, total debt \$154,889,480. The revenue bonds reach their highest point in September, and are reduced by tax collections to about \$2,500,000 in January. Most of the bonds bear from 3 to 3½ per cent. interest. The city's assessed valuation (1897) was \$2,168,635,856, of which \$1,787,186,791 was real estate and \$381,499,065 personal. The tax rate was \$2.10 per \$100. In 1895 the total expenditures were \$45,298,448, of which \$6,439,550 was for state taxes, \$5,340,549 interest on city debt, \$2,979,020 redemption of debt, \$3,208,358 department of public works, \$1,208,967 department of public parks, \$3,431,773 charities and corrections, \$5,955,912 police department, \$3,845,220 street-cleaning, \$5,522,625 board of education, \$1,738,744 judiciary, \$311,037 finance department, \$201,403 law department, \$511,955 health department, \$261,895 department of buildings, \$149,904 College of the City of New York, \$150,588 Normal College, \$156,770 department of taxes and assessments, \$206,798 printing and stationery, \$135,667 the sheriff, \$114,277 the register, \$442,370 bureau of elections, \$111,999 mayor and common council.

Water Supply.—The water with which the city is supplied is drawn from the great watershed of the Croton river, in Westchester co. Artificial storage reservoirs were made at the head of the aqueduct, the principal ones being the Croton Lake, Boyd's Corners, and the Middle Branch reservoirs; capacity of all 9,500,000,000 gallons. The aqueduct, of solid masonry, 40½ m. long, crosses Harlem river on the High Bridge, has a retaining reservoir in Central Park, 4 m. below High Bridge, a receiving reservoir a short distance further s., a distributing reservoir on Fifth ave., between 40th and 42d sts., and high service-towers with powerful pumps at High Bridge and at Ninth ave. and 97th and 98th sts. The entire system cost nearly \$30,000,000. and the average daily

consumption of water is about 95,000,000 gallons. The Croton aqueduct was formally opened, with grand ceremonies and amid great public rejoicing, 1842. The subsequent growth of the city necessitated the construction of a second aqueduct. Authority for this was granted by the legislature 1883; the work of excavating the tunnel, through which all but four sections of the aqueduct extend, was begun 1885, Mar. 7, and completed 1888, July 7; and the water was first allowed to run into the Central Park reservoir 1890, July 15. The entire aqueduct is $33\frac{1}{2}$ m. long, of which $30\frac{3}{4}$ m. are through a tunnel 18 ft. in diameter, excavated mostly through solid rock; the water is carried under Harlem river by gravity and siphons; the delivering capacity is 310,000,000 gallons daily, and the cost about \$22,000,000. The storage system includes the lakes and reservoirs of the first aqueduct, with additional reservoirs made by building the dams known as Sodom, Bog Brook, Taticus, Amawalk, Carmel, and Quaker Bridge dams, providing a total storage of 26,000,000,000 gallons. The Sodom, Carmel, and Quaker Bridge reservoirs were completed 1891-2.

Government.—Under the new charter of The City of New York, in effect 1898, Jan. 1, the city is divided into five boroughs: (1) MANHATTAN—the island of Manhattan and adjacent small islands; (2) THE BRONX—all north of the Harlem river; (3) BROOKLYN—all Kings county; (4) QUEENS—that portion of Queens county included in the city; (5) RICHMOND—Staten Island. Each borough elects its president for a term of four years. The municipal assembly consists of two chambers: the council of 29 members elected for four years from districts averaging more than 350,000 pop., and the board of aldermen, 60 members, one from each state assembly district, elected for two years. The president of the council is elected by the city, and the president of the board of aldermen by that body. The two chambers have control over all ordinances properly municipal, including department regulations, municipal improvements, franchises, and salaries not definitely specified.

The mayor is elected for four years and is not eligible for immediate re-election. He appoints and, during the first six months of his term, may remove all heads of departments except those elective. The departments number 13, as follows: the finance dept. is headed by the controller, elected for four years, and includes the city chamberlain appointed by the mayor, and a board of estimate and apportionment consisting of the mayor, controller, corporation counsel, president of the council, and president of the dept. of taxes. The law dept., headed by the corporation counsel, has its main office in Manhattan, with branch office in Brooklyn. The fire dept. is headed by a commissioner appointed for six years. The police dept. is presided over by a bi-partisan police board of four commissioners appointed each for four years, and includes supervision of the park and bridge police besides the regular force. The dept. of docks and ferries is headed by three commissioners

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appointed each for six years. In the dept. of education Manhattan and the Bronx have a separate board of 21 commissioners, Brooklyn a board of 45 commissioners, and Richmond and Queens each a board of 9. Each commissioner is appointed for three years. A central board is constituted with 19 members, consisting of the chairmen of each of the four boards, and 10 delegates chosen by the board of Manhattan and 5 by the board of Brooklyn. The health dept. is under five commissioners: the health officer of the port, the president of the police board, and three named by the mayor, two of whom must be physicians and one not a physician. The dept. of taxes and assessments is headed by five commissioners appointed by the mayor, one a president for six years, and the rest for four years. The board of assessors consists of five persons appointed by the mayor, and the board of revision of assessments consists of the controller, corporation counsel, and president of the board of public improvements.

The board of public improvements consists of a president and a commissioner of each of the six depts. of water-supply, highways, street-cleaning, sewers, public buildings, and bridges, appointed by the mayor, each for six years. The dept. of charities is headed by three commissioners appointed by the mayor, each for six years. The dept. of corrections is under one commissioner. The park dept. is headed by three commissioners appointed each for six years. The dept. of buildings is under three commissioners who must be competent builders or architects.

Courts. There are 23 municipal courts, 11 in Manhattan, 5 in Brooklyn, 3 in the Bronx, 2 in Queens, and 2 in Richmond; these are presided over by justices elected for terms of ten years. The courts have jurisdiction over cases involving \$500 or less. Justices of inferior courts of criminal jurisdiction, called city magistrates, are appointed for ten-year terms and number 19, of whom 7 are in Manhattan, 6 in Brooklyn, and 2 each in the other boroughs. For the court of special sessions there are 10 justices, 5 for the first division of Manhattan and the Bronx, and 5 for the second division of the three other boroughs.

History.—Among the archives at the Hague, Holland, is a letter addressed 'to the High and Mighty Lords of the States-General at the Hague,' signed P. Schagen, and dated 'at Amsterdam, Nov. 5, 1626.' It recites that 'there arrived here yesterday the ship called the Acre of Amsterdam, which sailed from the river Mauritius for New Netherland on the 23d of September. Report is brought that our people there are diligent and live peaceably; their wives have also borne them children. They had purchased the Island of Manhattan from the Indians for the sum of 60 guilders [about \$21]. It contains 11,000 margins of land.' So far as known, this letter is the only document in existence which shows the manner and the approximate time of the legal acquisition of the site of New York by the Dutch, after the early occupation by virtue of Hendrik Hudson's discovery 1609. The purchase was made by Peter Minuit, who

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arrived at New Amsterdam 1626, commissioned as director-general, and invested with authority to organize a regular govt. For earlier and some subsequent events, see NEW YORK (state), *History*.

The first legislative assembly met here 1691, Apr. 6; the first Trinity Church edifice was finished 1697; a malignant epidemic broke out 1702; the fifth newspaper in the colonies, the *New York Gazette*, was established 1725; a city library was founded 1729; Zenger's *New York Weekly Journal* was started 1733; the first attack on the freedom of the press, and the first great libel suit resulting therefrom, occurred 1735; many negro slaves were hanged, burned at the stake, or transported, on the discovery of an alleged slave plot to burn the city and kill the whites, 1741; King's (now Columbia) College was chartered 1754; the Stamp Act Congress met here 1765, and the Sons of Liberty were organized to oppose the act 1766; the Chamber of Commerce, the first institution of its kind in America, was organized 1768; a slight collision between the troops and a mass-meeting of citizens who had resolved not to submit to oppression occurred 1770; a vigilance committee was formed to prevent the landing of tea 1773; a tea-ship was forced to return to England, and the tea-cargo of another ship was thrown overboard, 1774; and the colonial assembly finally adjourned 1775, Apr. 3. When the news of the battle of Lexington (Apr. 19) reached the city, the citizens' committee of safety assumed the direction of public affairs, and the royal govt. fled to a British war-vessel in the harbor. Delegates were elected July 25 to the continental congress; Aug. 22 a man-of-war fired on the city because congress had ordered the removal of all the cannon in the city to the interior; 1776, Jan., a detachment of the American army took possession of the city, and was followed in the spring by the main army; and Sep. 15, after the American defeat on Long Island, the British occupied the city, and remained in possession till 1783, Nov. 25. During this interval there were disastrous fires—1776, Sep. 21, and 1778, Aug. 7—the schools and colleges were closed, and all non-Episcopal churches were transformed into prisons, stables, and riding-schools. The city was the state cap. 1784–97; seat of the federal govt. 1785–90; and scene of Washington's inauguration as first pres. 1789, Apr. 30. The Bank of New York was organized 1785; the corner-stone of the City Hall was laid 1803; the New York Free School was incorporated 1805; steam-navigation on the Hudson river was first accomplished by Robert Fulton (q.v.) 1807; the city was first surveyed and officially laid out 1807; many privateers sailed from the port, and the first steam-ferry to Jersey City was established, 1812; Gen. Lafayette was given the freedom of the city 1824, Aug. 15; gas was introduced 1825; the Erie canal was opened 1825, Oct.; the city was visited by the Asiatic cholera 1832 and 34; a three days' fire destroyed more than 600 buildings, and \$20,000,000 in property, 1835,

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Dec. 16-19; the Croton aqueduct was completed 1842; another conflagration occurred 1845, July 19; a fatal riot occurred in Astor place, between the supporters of the actors Edwin Forrest (q.v.) and William Charles Macready (q.v.), 1849, May; Louis Kossuth (q.v.) was publicly welcomed 1851; the Crystal Palace industrial exhibition was opened 1853, July 14; a grand celebration of the laying of the Atlantic cable was held 1858; and the first Japanese embassy to the United States, and the Prince of Wales, were publicly received 1860.

During the civil war, the city furnished 116,382 men to the Union armies. Opposition to a federal draft for more men for the army, believed to be unjust as discriminating against the city and favoring the rest of the state, led to a terrible riot 1863, July 13-17, in which many buildings were burned and more than 1,000 lives lost. The riot cost the city in indemnities about \$1,500,000. The remains of Pres. Lincoln were escorted through the city 1865, Apr.; a riot between the Orangemen and Ribbonmen, Irish associations, caused the loss of 62 lives and was suppressed by the police and militia 1871, July 12; the Tweed ring, that had perpetrated enormous frauds on the city and co. treasuries, was exposed 1871; a large part of Westchester co. was annexed to New York co. 1873; the East River Bridge to Brooklyn was formally opened 1883, May 24; Bartholdi's Statue of Liberty (q.v.) was received 1885, June 19, and dedicated 1886, Oct. 28; the remains of General Grant were escorted to Riverside Park on the Hudson, by an imposing milit., naval, and civic procession, 1885, Aug. 8; the centennial of the inauguration of Pres. Washington was celebrated 1889, Apr. 29, 30, and May 1; 1897, Apr. 27, the body of Gen. Grant was transferred to a splendid mausoleum in Riverside Park, the obsequies forming one of the grandest funeral commemorations in the world's history, the cost of the mausoleum being about \$600,000.

Pop. (1790) 33,131; (1870) 942,292; (1880) 1,206,299; (1890) 1,513,501; (1900) 3,437,202.

NEW YORK UNIVERSITY.

NEW YORK, COLLEGE OF THE CITY OF: established 1848 by the city board of education, who are *ex officio* the trustees; the tuition is free; a preparatory department exists under the name of subfreshman class; and, besides the usual academic courses of study, classical and scientific, there is a mechanical course, with well-equipped workshops, and a two years' post-graduate course in civil engineering. The mechanical differs from the scientific in some features of the senior year, and in the requirement of at least four hours' work per week in shops and mechanical laboratory, whereas such practice is optional with other students and under advice of the faculty. These provisions, it is expected, will in some form be widely adopted in colleges, in this age of more complete education, and in view of the excessive time and interest given by students to athletics: it is claimed that this system applies the corrective, and is of great value in itself. The faculty, of which John H. Finlay was elected pres., 1903, numbered 92, and there were 1,915 students in all grades. Opened 1849, the institution had graduated 2,332. The library has 35,000 vols. The college has long occupied the corner of Lexington avenue and 23d st. It is soon to have a more commodious building on Amsterdam avenue.

NEW YORK UNIVERSITY: a university proper, embracing departments of arts and science, medicine, and law, besides schools of engineering, chemistry, and pedagogy, and providing post graduate courses in all these. The buildings occupied by the medical department, known as the University Medical College, are on East Twenty-sixth street, opposite Bellevue Hospital, were reconstructed 1887, have a frontage of 130 ft., and include the new Loomis laboratory, also a dispensary where more than 10,000 patients were treated 1889. The Gothic stone building on Washington square, erected 1832-35, was removed 1895, and an 11-story stone building erected in its place; the basements and 7 stories are leased for 25 years to the American Book Co., which furnishes heat, light, and elevator service to the upper floors, where are the chancellor's and treasurer's offices and the council-room of the univ., the graduate school, the school of pedagogy, and the school of law. The property is exempt from taxation while these departments and offices are retained there. In 1890 a movement was begun to secure a new site for the univ.; 1891 a site was secured extending from Sedgwick ave. to Aqueduct ave., immediately s. of the new University ave., the new name of East 181st street. The single tract included in the college campus comprises 22 acres. In addition to this is a boat-house site on the water-front; the univ. has also purchased several adjoining parcels in order to restrict the neighborhood against nuisances, and to provide locations for fraternity houses, professors' residences, etc. The univ. site, on high ground, overlooking the Harlem valley, is singularly beautiful. The entire tract has received the name University Heights. The buildings ready for occupancy on Opening Day, 1895, Oct.

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19, were the Hall of Languages, Havemeyer Laboratory of Chemistry, the Charles Butler Hall, the Gymnasium, Laboratory of Physics and Engineering, Laboratory of Biology and Geology, and the Association Hall and Reading-room. The first of 4 residence halls was opened 1896, Nov. 26, a 4-story building, designed for 112 students, and provided with bicycle-rooms, music-rooms, etc. A new central building, the gift of a benefactor whose name is withheld, contains a library, commencement-hall, museum, and administration offices: the cost was about \$1,000,000. A portion of the campus called 'The Ohio Field' is set apart for athletics, and comprises a $\frac{1}{4}$ -m. running-track, with space for football, baseball, etc.

History.—The institution known as the University of the City of New York originated in a private meeting of 9 gentlemen 1829, followed by a public meeting 1830, and an act of incorporation 1831, the opening of college work occurring the next year. In the old univ. building the recording telegraph was invented by Prof. Morse 1835, and the application of photography to portraiture by Prof. J. W. Draper 1839. In 1883 the univ. became independent of the city govt. In 1896, Mar. 19, the name was changed by the State Board of Regents to New York University.

Statistics, etc.—The chancellor 1903 was Henry M. MacCracken, D.D., LL.D.; total number of professors and instructors, 212; number of students, 2,025; number of graduates since organization 17,537 vols. in the library 67,360.

NEW ZEALAND.

NEW ZEALAND, *nū zē'land*: British colony in the s. Pacific Ocean; consists of three islands, two large and one very much smaller, and of a number of islets scattered round the coasts; about 6,500 m. w. from the coast of S. Amer., and about 1,210 m. s.e. of Australia. The group is irregular in form, but may be said to extend from the s. in a n.n.e. direction, and, like the peninsula of Italy, resembles a boot in shape; lat. from $34^{\circ}15'$ to $47^{\circ}30'$ s., long. from 166° to 179° e.—thus a'almost the antipodes of the British Isles. The islands are named respectively North, South (sometimes also Middle), and Stewart's Island. North Island is about 500 m. long, and 200 m. in greatest breadth e. to w.; South Island (the largest) is 550 m. long, and 210 m. in greatest breadth—the average breadth of both islands being about 140 m.: Stewart's Island (the smallest) is triangular in shape, about 900 sq. m. Area of North Island 45,687 sq. m., South Island 57,379 sq. m., the Chatham Islands and the Auckland Island, e. and s., 377 sq. m.: total area about 105,000 sq. m., about one-sixth less than that of Great Britain and Ireland. The South Island has an area about equal to that of England and Wales. The North is separated from the South Island by Cook's Strait, 18 m. wide at its e. and 90 m. wide at its w. end; the South is separated from Stewart's Island by Foveaux Strait, averaging about 20 m. in width.

Coast-line.—Of the entire coast-line of about 4,000 m., nearly 1,500 m. is formed by the shores of North Island, which are deeply indented and contain many excellent harbors. Commencing from North Cape. and going s.e. round the island, the chief harbors are Monganui, Wau-garoa, the Bay of Islands, Auckland, Mercury, and Tauranga bays, and the ports of Wellington, Manukau, and Hokianga. On the n. and s. coasts of South Island, which are much broken, the harbors are numerous and excellent; on the e. coast, the principal harbors are Akaroa, Victoria, and Dunedin. On the coasts of Stewart's Island, also, there are good ports.

Surface.—The N. Z. Islands are of volcanic origin, and a great portion of the entire area is occupied by mountains, among which are many extinct and a few active volcanoes. In North Island, Mount Ruaperhui, the highest summit of the central range, is 9,100 ft. in height, capped with perpetual snow. In the same range is Tongariro, an active volcano, 6,500 ft. high. A continuous range of mountains runs along the w. coast of South Island, and assumes the form of table-lands and isolated peaks toward the east. Its highest peak, Mount Cook (12,349 ft.), was first ascended 1882. Stewart's Island rises to about 3,000 ft. In North Island, the mountains are mostly clothed with evergreen forests of luxuriant growth, interspersed with fern-clad ranges, and occasionally with treeless, grassy plains; extensive and rich valleys and sheltered dales abound; and in the east of South Island are many expansive plains of rich meadow-land, admirably adapted either for agriculture or for

cattle-breeding. Water and water-power are in great abundance in the colony, and the numerous rivers are subject to sudden floods from the melting of the mountain snows. As a rule, however, the streams are short, and not navigable more than 50 m. above their mouths. The chief is Waikato river, in North Island, which, issuing from the Taupo Lake (30 m. long by 20 broad), flows n. 200 m., and reaches the sea on the w. coast. In South Island, the rivers Clutha, Mataura, and Waiau, all flowing s., are among the chief. Around Lakes Rotomahana and Rotorua are a number of grand and beautiful geysers, which throw up water heated to 2° above the boiling-point. The lakes are numerous, especially in the South Island, and some of them are of considerable size and surrounded by lovely scenery. The geology of N. Z. is very remarkable. The mountains, which are of every variety of outline, are composed chiefly of the lower slate-rocks, intersected with basalt and mixed with primary sandstone and limestone. There are beds of coal and lignite, and the coal has been to some extent worked.

Soil, Climate, and Productions.—Of the whole surface-extent of N. Z. (nearly 70,000,000 acres, little less than the combined area of England and Wales, Scotland, and Ireland), one-fourth is estimated to consist of dense forest tracts, one-half of excellent soil, and the remainder of waste lands, scorix-hills, and rugged mountain regions. Nearly 40,000,000 acres are supposed to be more or less suitable for agriculture and cattle-breeding. The soil, though often clayey, has in the volcanic districts more than a medium fertility; but the luxuriant and semi-tropical vegetation is perhaps as much due to excellence of climate as to richness of soil. Owing to the prevalence of light and easily worked soils, all agricultural processes are performed with unusual ease. The climate of N. Z. is one of the finest in the world. The country contains few physical sources of disease; the average temperature is remarkably even at all seasons of the year, and the atmosphere is continually agitated and freshened by winds that blow over an immense expanse of ocean. The climate resembles that of England, with half the cold of the English winter; while the summer is longer and somewhat warmer, the atmosphere is more breezy and pure, and there are many more fine days throughout the year. In North Island, the mean annual temperature is 58° ; in South Island 52° . The mean temperature of the hottest month at Auckland is 68° , and at Otago 58° ; of the coldest month, 51° and 40° . The air is very humid, and the fall of rain is greater than in England, yet there are more dry days. All the native trees and plants are evergreens. Forests, shrubberies, and plains are clothed in green throughout the year, the result of which is that cattle, as a rule, browse on the herbage and shrubs of the open country all the year round, thus saving great expense to the cattle-breeder. The operations of reclaiming and cultivating land can be carried on

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at all seasons. January is the warmest month, June the coldest. All the grains, grasses, fruits, and vegetables of the warmer temperate countries are cultivated in N. Z. with perfect success, being excellent in quality and heavy in yield; while, besides these, the vine is cultivated in the open air, and maize, the taro, and the sweet-potato are cultivated to some extent in the sunny valleys of North Island. The entire acreage under crop in N. Z. (1851) was 29,140; (1858) 141,007; (1881) 4,768,192; (1901) including 11,620,178 acres in sown grasses, 13,083,971. The principal crops were wheat, oats, barley, potatoes, and sown grass, which, under ordinary circumstances, are grown to great advantage in N. Z. Besides a few harmless lizards, a small species of rat is the only indigenous four-footed animal found in either of the great islands. Hawks are numerous. The country is destitute of snakes, and possesses no insect so noxious as the English wasp. The pig, introduced by Cook, runs wild; and the red and fallow deer, the pheasant, partridge, quail, etc., and the commoner domestic animals introduced by colonists, thrive well. In 1902, March, there were in the colony 279,692 horses, 1,361,784 cattle, 20,233,099 sheep, 224,024 pigs, and 1,323,542 heads of poultry, besides mules, asses and goats. Coal in abundance, and of good quality, as well as iron, gold, silver, tin, copper, etc., are widely distributed. For statistics of gold exported, see OTAGO. Valuable timber is in great abundance. In 1901 the revenue (of which the sources are principally customs receipts and sale of crown lands) amounted to £6,152,839; debt of the general govt. (1875) £13,897,185, (1883) £30,357,311—but this increased debt is secured by the public works carried out. The exports, principally wool, corn, gum, preserved meat, and gold, amounted (1882) to £6,658,008; the wool of that year being valued at £3,175,415. Total exports of gold 1857-80 were 9,552,194 oz., in value £37,380,633. Imports, consisting of British manufactures, etc., amounted (1882) to £8,609,270. In 1902 there were 1,443 m. of railway in operation, 2,323 m. of railway, 7,469 m. of telegraph line and 21,705 m. of wire. The advance of N. Z. in recent years has been great; but its immense resources are as yet scarcely developed.

The colony was divided into the following nine provinces: Auckland, Taranaki, Wellington, Hawke's Bay, Nelson, Marlborough, Canterbury, Otago, and Westland. The provinces were abolished by the colonial parliament 1875, and a system of counties substituted. The counties now number 63. The govt. is administered by a gov. appointed by the crown, and a ministry, a legislative council of members appointed for life by the gov., and a house of representatives elected by the people on a basis of manhood suffrage. Power for disallowance of legislation vests in the crown, but is scarcely ever exercised. The chief educational institutions are the Univ. of New Zealand (which grants degrees) and the

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Univ. of Otago, and Canterbury College; with numerous high schools, for higher and secondary education, and private schools. Besides these, the number of primary schools (1880) supported by the state was 836, with attendance 82,000. The principal churches are the Church of England, predominating in Canterbury; the Presb. Church, which predominates in Otago; the Wesleyan; and the Rom. Catholic.—The military forces of N. Z. are the volunteers, numbering about 8,500; and there are armed constabulary in the North Island.

N. Z. was discovered by Tasman 1642, and was repeatedly visited by Capt. Cook, who surveyed the coasts 1770. After the settlement of Port Jackson, in New South Wales, the English and American whaling-ships had recourse to the coasts of N. Z. for provisions and shelter. N. Z. flax came also to be an article of traffic, and individual Englishmen began to settle on the coasts, and intermarry with the natives, and acquire land in right of their wives or of purchase. Missionary enterprise began 1814, favored by various chiefs, and the missionaries not only labored to convert the natives, but also introduced improved culture among them, and tried to protect them from the injustice, fraud, and oppression of the Europeans that had acquired settlements. A British resident or consul was appointed 1833, but without authority. To put an end to the anarchy induced by a desultory colonization and the purchase of lands for a few hatchets or muskets, a lieut. gov. was appointed 1840, and a treaty concluded with the native chiefs, whereby the sovereignty of the islands was ceded to Britain, while the chiefs were guaranteed the full possession of their lands, forests, etc., so long as they desired to retain them: the right of preëmption, however, was reserved for the crown, if they wished to alienate any portion. Thus N. Z. became a regular colony, the seat of govt. of which was fixed on the Bay of Waitemata, and called Auckland. The previous year an association, called the New Zealand Company, had made a pretended purchase of tracts amounting to a third of the whole island's; and for a dozen years most of the colonization of N. Z. was conducted under its auspices. The conduct of the company is considered to have been, on the whole, prejudicial to the prosperity of the colony; and, after a long conflict with the govt., they resigned 1852 all their claims—which the govt. had never confirmed—on condition of receiving £268,000 as compensation for their outlay. The unscrupulous way in which the company and others often took possession of lands brought on, 1843–47, a series of bloody conflicts with the warlike natives, whose hostility after having subsided for some time, in 1861 again broke out in a series of intermittent struggles. These continued until, on the withdrawal of the imperial troops, the colonists, from their knowledge of bush life and intensified earnestness, completely subdued the refractory natives, who are now turning their attention to

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agriculture and trade. In 1852 constitutional govt. was established, and 1865 the seat of govt. was transferred from Auckland to Wellington (q.v.), the present capital.—The chief cities are Dunedin (q.v.), Auckland (q.v.), Christchurch (q.v.).

The New Zealanders, or Maories (q.v.), mostly in North Island, are supposed to have been 120,000 in number when the colonists landed. In 1881 the census showed them to be 44,099—an *increase* as compared with 1871. In 1901 immigrants into New Zealand amounted to 25,086 persons; emigrants from it, 8,564. Pop. (1858) 59,328; (1881) 489,933; (1891) 668,353; (1901) 815,862.

NEW ZEA'LAND FLAX: see FLAX, NEW ZEALAND.

NEXT, a. *nĕkst* [AS. *neah*, near; *nehst*, next]: nearest in place; nearest in time, place, degree, or rank; having no object intervening between it and another: AD. immediately succeeding, or at the time or turn nearest, almost—as, 'the matter is *next* to impossible.' NEXT DOOR TO, close to; not far removed from anything. NEXT FRIEND, in *law*, person in whose name, or rather by whose agency, an infant—i.e., a person under the age of 21—sues in the courts of law and equity. The object is chiefly to have some party that can be held for costs in case the infant fails in the action. In practice, the father, if alive, is usually the next friend, but any substantial person may be so. In the court of chancery, a married woman sues or appears by the intervention of a next friend, where she is personally interested. NEXT OF KIN, the nearest in relationship, whether of consanguinity or affinity. NEXT PRESENTATION, the right to present a clergyman to the next vacancy of a benefice only, and not an advowson or perpetual right. *Note.*—NEXT may frequently be regarded as a prep. when followed by *to*, expressed or understood, as, 'you are *next* to him.'

NEXUS, n. *nĕks'ŭs* [L.]: connection; tie.

NEY, *nā*, MICHEL: famous marshal of the first French empire: 1769, Jan. 10—1815, Dec. 7; b. Saar Louis; son of a cooper. He was a non-commissioned officer in a hussar regt. when the Revolution began, and afterward rapidly rose to high military rank. For the capture of Mannheim by a *coup-de-main*, he was made a gen. of division 1799. He was interim commander of the army of the Rhine for a short time, during which he frustrated by a bold diversion an important movement of Archduke Charles against Massena and the army of Switzerland. After the peace of Lunéville, Bonaparte, anxious to win N., with other republicans, to his party, brought about his marriage with a young friend of Hortense Beauharnais, and appointed him inspector-gen. of cavalry. On the establishment of the empire, he was made a marshal. In 1805 he stormed the intrenchments of Elchingen, and was created Duke of Elchingen. He afterward rendered important services in the Tyrol; contributed much to the French successes of 1806 and 7; and served in Spain

with great ability 1808 and 9, till he was dismissed by Massena, commander-in-chief, on a dispute about the plan of the campaign. Chagrined by this, and dissatisfied with Napoleon's despotism, he remained inactive; but 1812 received the command of the third *corps d'armée*, and greatly distinguished himself at Smolensk and the Moskwa, in consequence of which he was created prince of the Moskwa. He showed great abilities also in the French retreat. He had a principal part in the campaigns of 1813,4; but after the capture of Paris he urged the emperor to abdicate, and submitted to Louis XVIII., who loaded him with favors. On Napoleon's return from Elba, N. assured the king of his fidelity, and was sent against Napoleon at the head of 4,000 men; but impelled by his old memories, and finding the emperor received with general enthusiasm, and his own soldiers favorable to his cause, N. went over to his side. In the battle of Waterloo, he commanded the centre, and had five horses shot under him. After the capitulation of Paris, it is said that a costly Egyptian sabre, the gift of Napoleon, led to his being suspected by an official, and arrested. He was tried by the house of peers, and by a vote of 169 to 17 was condemned to death for high treason, and was shot in the garden of the Luxembourg two days afterward. He left three sons, who published his *Mémoires* (2 vols. Par. 1833).—N. was a brave and honest man, guilty of a divided allegiance in those dismal days when his country itself scarcely knew from month to month to whom its allegiance was due.

Strangely, the question has recently been propounded, in all seriousness, whether Marshal N. lived in Davie co., N. Carolina, and died in that state 1846, Nov. 15, more than 30 years after the reported death-scene in the garden of the Luxembourg. By certain investigators it is asserted that the sentence of death was meant not for execution, but for popular effect; that N., without collusion on his part, was spirited away unharmed, but as a dead man; that he was hurried on board ship, and found himself landed at Charleston, S. C., 1816, Jan. 29; that he supported himself by teaching for many years; that his secret was well kept, except as far as it was allowed to escape in one or two unguarded utterances, and except its constant liability to detection through his noticeable personality and his evident lifelong intimacy with the rulers and the political scenes of Europe in the generation previous; and that his grave may now be seen in Third Creek churchyard, Rowan co., N. C. The story, though it may be judged not proved, is certainly strange enough to be true. (See an article in the *Independent*, New York, 1887, June 23.)

NEZ PERCÉS, *nā pār-sā'*, or SAHAP'TINS: tribe of Indians formerly occupying portions of Washington and Oregon, and now on reservations in Idaho and Indian Territory. They made a treaty with the members of the Lewis and Clarke expedition about 1805. The American Board sent missionaries among them 1836, who opened schools and taught the rudiments of agriculture. An epidemic of the measles, 1847, destroyed large numbers; one of the missionaries was murdered by another band of Indians, and the mission was broken up. The tribe has usually been friendly to the whites, was demoralized by gold-miners 1859, but has improved under the influence of a Presb. mission. A portion of the tribe did not accept the treaties, and have no settled place of abode. The others are peaceful and prosperous. Several books have been published in their language.

N'GAMI, *ngá'mē*, LAKE: lake in the interior of Africa; between the 20th and 21st parallels s. lat., and between the meridians 22° 10' and 23° 30' e. long.; about 2,500 ft. above sea-level. It is connected by a series of sluggish anastomosing streams with the river system of the Zambesi; its extent as well as depth varies with the fall of rain in the country n. of it, but its average size may be taken at 70 m. long by a breadth of 20 m. and a depth varying from 3 to 28 ft. The existence of lakes in the interior of Africa was vaguely known as far back as the days of Herodotus; and the earliest modern maps show at least half-a-dozen large and small, one of which is about the size, and very nearly in the position, of that shallow reservoir of surface drainage which was discovered, or at least first visited, by a European 1849, when Dr. Livingstone and Mr. Oswell, who were aware of its existence from native report, reached its shores by a circuitous route from the Cape Colony. Although since ascertained to be of little importance in the physical geography of these regions, Lake N. was at first supposed to be in some way connected with the larger inland seas of Nyassa, Victoria N'yanza, and Tanganyika. In 1853 Lake N. was reached from the w. coast, near Walfish Bay, by the traveller Andersson; and there is now a well-beaten route for traders between these two places, and a considerable quantity of ivory and ostrich feathers are annually collected in the neighborhood of the lake. The principal characteristics of the region are rivers with very sluggish current, flowing often in different directions to and from the lake, large salt-pans, and extensive dry flats, covered with dense bush, the haunt of elephants and other large animals. The water of N. is generally fresh, but in the dry season becomes brackish. The e. end is much deeper than the w., and it has been inferred that during the last century the shape and size of the lake have undergone material alterations. The chief tributary, the Tonke or Tioge, coming from the n.w., is deep, and in June, July, and Aug. brings down vast volumes of water. The Suga or Zouga, the main outlet, flows s.e., and finally disappears in a large salt-marsh,

NGAN-KING—NIAGARA RIVER.

NGAN-KING, *ngân-kĩng'*: large and wealthy city of China, cap. of the province of Ngan-whi; on the left bank of the great river Yang-tze-Kiang, 190 m. s.w. from Nanking. The surrounding country is highly cultivated and very densely peopled. The mineral riches of the neighborhood are considerable. N. is a place of busy trade, great part of the goods intended for Nanking passing through the hands of its merchants. The trade is carried on by means of vessels on the river. Porcelain and cloth are among principal articles of trade.

NGAN-WHI, *ngân-hwě'*, or NGAN-HOEI, *ngân-hwā'*, or GAN-HWAY, *gân-hwā'*: province in the interior of China; between lat. 29° and 34° n. and long. 115° and 119° e.; surrounded by the provinces of Kiang-Soo on the n.e.; Che-Kiang, s.e.; Kiang-See, s.; Hoo-Pee, w.; and Hoo-Nan, n.w.; 48,461 sq. m. Except in the s. and w., where there are ranges of hills of moderate elevation, the surface is level. It is crossed by the large rivers Hoai-Ho and Yang-tze-Kiang, which have numerous tributaries; and there are several lakes of considerable size, of which the largest is Chan-Hu. There is much mineral wealth, and gold, silver, and copper, with other metals, are mined. Of the various manufactures, varnish, lanterns, and ink are most imported. The best quality of green tea is grown in the s. part of the province.

NGORNU': see ANGORNOW.

NIAGARA FALLS: a city, Niagara co., N. Y.; on Niagara river, and on the New York Central and a branch of the Erie railroads, 22 m. n.n.w. of Buffalo; connected with opposite bank of the river by a suspension bridge, from which a fine view of the great cataract is given; another bridge connects it with Goat Island. It has flouring-mills, sash-and-blind factories, etc. Pop. (1900) 19,457.

NIAGARA RIVER—NIAGARA FALLS: short stream — and its stupendous cataract—flowing from Lake Erie northward into Lake Ontario; about 33 m. in length, and its descent from the level of one lake to that of the other is about 328 ft. It is really a part of the great St. Lawrence river and lake system. The name Niagara in the Indian tongue means 'thunder of waters.' Issuing from Lake Erie, it is three-quarters of a m. broad; but as it flows on, it becomes several m. wide, making room for a number of islands, the largest of which, Grand Island, is 12 m. long and 2 to 7 broad. At the foot of Grand Island, which reaches within 1½ m. of the *Falls of N.*, the river is contracted to a breadth of 2½ m., and grows narrower as it proceeds. By this, and by the descent in the channel, about 60 ft. in the m., above the Falls, are produced the swift currents known as the *Rapids*, in which the river, notwithstanding its great depth, is perpetually white with foam. At the Falls, 22 m. from Lake Erie, the river has a breadth of 4,750 ft.; but its centre is occupied by an island containing about 75 acres, called Goat Island, 40 ft. above the water; but in consequence of a bend in the channel, by far the larger por-

NIAGARA RIVER—NIAGARA FALLS.

tion of the water is sent down by the Canadian side. Goat Island, having a breadth of about 1,000 ft., is separated from the American shore about 1,400 ft., and from the Canadian about 2,800 ft.; but the breadth of the Canadian Fall is increased by an upward bend in its line. On this side, therefore, is the grander cataract, which has been named the *Horseshoe Fall*, but no longer bears the name appropriately, as the precipice has been worn from a curved into a somewhat angular shape. This process of wearing away still goes on gradually, a large projection on the Canadian bank, known as Table Rock, having partly fallen off 1850 and 63. The Horseshoe Fall is about 150 ft. in height. The water is so deep that it retains its green color some distance below the brow of the precipice; and it rushes over with such force that it is thrown about 50 ft. from the foot of the cliff. One may thus, having donned an oilskin dress, enter a short distance behind the curved sheet of water; but the spray is so blinding, the din so deafening, and the current of air so strong, that it requires a calm nerve and firm foot: this recess is known as the Cave of the Winds. The separation caused by Goat Island leaves a large wall of rock between the Canadian and American Falls, the latter being again divided by an islet at a short distance from Goat Island. This narrower fall is higher than the Horseshoe by about 14 ft. A little above the Fall, the channel is divided by Bath Island, which is connected by bridges with Goat Island and the American shore. A small tower, approached from Goat Island, long stood on a rock over the brow of the Horseshoe Fall, giving the finest view on the American side, the Table Rock on the Canadian side giving the completest view of the entire cataract. The Falls can be seen also from below on both sides, and every facility is given for viewing them from all the best points; while magnificent hotels, Canadian and American, in the village of Niagara Falls (in Niagara co., N. Y.; pop. of vil. (1890) 5,502), offer inducements to the tourist to stay till he has received the full influence of the scenery. The discharge of Niagara Falls is computed at about 18,000,000 cubic ft. per minute. Below the Falls, about 750 ft., the river is crossed by a footbridge. The current is lessened for about a mile, but increases again as the channel becomes narrower and the descent greater. Between three and four m. below the Falls, a stratum of rock runs across the direct course of the river, which, after forming a vast circular basin, with a frightful whirlpool, is forced away at right angles to its old channel. The celebrated wire suspension-bridge for the Great Western railway, with a road beneath for vehicles and foot-passengers, crosses the river $1\frac{1}{2}$ m. below the Falls; it is 800 ft. long, and 200 ft. above the water. There is a new cantilever railway-bridge about 300 ft. farther up the river: see BRIDGE.

For about seven m. below the Falls, the river, descending 104 ft., varies in width from 750 to 1,200 ft., flowing

NIAGARA FALLS.

through a ravine with perpendicular banks 200 to 350 ft. high. At Lewiston, this gorge ends, and the river passes on its peaceful course to Lake Ontario. There are various theories about the rate and the direction of the wearing-away of the rocks by the great cataract: whatever value may attach to this guess-work, it is certain that since the Falls were seen first by Jacques Cartier, 1535, and were described first by Father Hennepin, 1678, the changes in aspect have been many and great. Some early writers mention as many as six different falls.

THE NEW YORK STATE PARK AT NIAGARA FALLS is the official designation of a reservation on the American side of the Niagara river, near the Falls. It embraces a strip of land 100 to 200 ft. wide and about a mile in length, also including the old Prospect Park, and Goat, Bath, Bird, Luna, and other islands in the river; total area about 110 acres. Public attention was called to the desirability of opening a park at this point first by Gov. Robinson of N. Y., in a message to the legislature 1879, in which he recommended that a suitable area be purchased by the state and made free to the public, thus avoiding the annoyances and exactions to which visitors were subjected. A commission was appointed, which reported favorably. In 1883 the legislature authorized the gov. to appoint commissioners who should locate and appraise the lands required. The state subsequently purchased the land for \$1,433,-429.50; and 1885, July 15, the park was opened to the public, with imposing ceremonies. It is under the care of commissioners, whose expenses are paid, but who receive no salary. The ground has been cleared of unsightly buildings and fences, and various other improvements have been made. Admission is free, and visitors can obtain all needed information at the reception-house in the old Prospect Park. Similar action was taken by the Canadian govt., and a strip of land nearly two miles long was purchased, and, under the name Canadian Niagara Falls Reservation, was opened 1887.

NIAGARA FALLS, ELECTRIC POWER FROM: the great cataract put to a new service. The first use of this immense water-power was made by a primitive saw-mill, 1725. Nearly 120 years later Augustus Porter conceived the plan of hydraulic canals, and by 1861 the first of these was in operation; another, which furnished 6,000 horsepower to several mills, was completed 1873. The idea of utilizing water-power to generate electricity was first publicly suggested in 1876, during the visit of Sir William Siemens to Niagara, and the pioneer to turn it into practical use was Lord Armstrong. Ten years later the Niagara Falls Power Company, formed to utilize this water-power, was incorporated. It was followed (1889) by the Cataract Construction Company, which began operations 1890, Oct. 4. This company cut a canal, 100 ft. to 250 ft. wide and 12 ft. deep, from the Niagara river at Port Day, $1\frac{1}{2}$ miles above the falls, 1,200 ft. in length. The canal connects with a tunnel through shafts. The tunnel, the outlet of

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which is almost beneath the suspension bridge, runs under the village of Niagara Falls and is cut through rock 200 ft. below the ground-level. Its total length is 7,520 ft.; its height 19 ft., width 21 ft. It has a cross-section area of 386 sq. ft. In shape its section resembles a horseshoe. The vertical shafts, or wheel-pits, which connect the canal and tunnel are cut in solid rock and sunk to a depth of 178 ft. They are 21 ft. wide and 140 ft. long. Near the bottom of these shafts turbine-wheels, driven by the water from the canal, are set, and at the bottom lateral tail-races connect the shafts with the tunnel. The water running along the tail-races passes into the tunnel, through which it flows to the river. But the water does not flow to the turbines directly from the river. It runs along the canal and through steel shafts, or penstocks, into them. The turbines are of 5,000 horse-power and operate electric generators of the same energy. There are 10 of these each having a mill-race. The first practical test of the hydraulic tunnel was made 1894, Jan. 25; and the first distribution of power in 1895, Aug., to the plant of the Pittsburg Reduction Co. In drilling the tunnel over 300,000 tons of rock were removed, and that work, together with the brick lining, engaged 1,000 men about 3 years. No less than 16,000,000 bricks were used for lining. The total energy developed by the falls has been placed at 7,000,000 horse-power, and among others using some of this power are the Calcium Company, Buffalo and Niagara Railway Company, and the Niagara Falls Electric Lighting Company. In 1903 two similar plants were being constructed, one of 50,000 horse-power on the American side and one of 120,000 horse-power on the Canadian side. In 1895, December, the city of Buffalo granted a franchise to the Niagara Falls Power Company to supply power to that city—the terms being that it furnish 10,000 horse-power to consumers by 1896, June 1, and additional 10,000 horse-power in each successive year. At midnight 1896, Nov. 15, the Niagara Falls electric power was first flashed over the wires to Buffalo, 18 miles distant. That city is now lighted by electricity generated at Niagara, and its water-works and street cars, as well as various industries, are operated by the same means.

NIARE—NIASSA.

NIARE, 'nĩ-ār' (*Bos brachicheros*): wild ox or buffalo of tropical w. Africa, in size and weight about equal to the smaller breeds of British oxen, but of greater strength. The head is rather small; the muzzle black, the ears are long and pointed, and fringed with beautiful silky hair, several inches long. The animal is gracefully proportioned, having nothing of the clumsiness of the common buffalo. The tail is tufted at the extremity with black hair, several inches long. Herds of these oxen were seen by Du Chaillu in the open or prairie lands s. of the mouth of the Ogobai. They are shy and fierce: if wounded they turn upon the hunter with terrible fury. No attempt seems yet to have been made to domesticate this animal, which is probably very capable of it, and might be found more suitable than other oxen for warm climates.

NIAS, nē-ās': important island and island group, belonging to Holland, w. of Sumatra, 0° 18' 54"—1° 35' n. lat., and 97°—98° e. long; N. island having about 1,575 sq. m., and the group about 2,523 sq. m. In 1857, when the Dutch took complete possession of the island, the population was reckoned 170,000. There are several places where ships can anchor and take in provisions, water, etc. On the e. coast is the village Nias, and on the w. Silorongang. Little islands and coral reefs lie here and there on the coast, which in some places is steep, while mountain-chains run from the s.e. to the n.w. There is a greater breadth of excellent farming-grounds than the population, reduced by internal wars and the exportation of slaves, can properly cultivate. They grow rice, cocoa-nuts, bananas, tobacco, sugar-canes, etc., and annually about 110,000 lbs. of pepper. Cattle and horses have been imported, and much attention is given to the raising of pigs and fowls. Formerly, about 500 Niassers were carried away annually as slaves to Batavia and other places; and, though this traffic has been mostly suppressed, it still continues.

The Niassers are of Malay race, but fairer than the Malays usually are. They are gentle, sober, and peaceful, remarkably ingenious in handicraft, ornamenting their houses with wood-carvings, forging arms, etc. The women labor in the fields, the children weave mats, while the men look after the live-stock, and hunt the deer and wild swine. They worship a superior deity and fear a powerful one, who pursues them if they do evil. Polygamy is permitted, but is rare. The gift to the bride's family is from 60 to 500 dollars. Divorce is not allowed, and adultery is punished by the death of both parties. Dead bodies are placed in coffins above the ground, and creepers and flowering shrubs planted, which speedily grow up and cover them. Trade is on the increase.—See *Het Eiland Nias*, by Domis; Crawford's *Descriptive Dictionary*; *Neêrlandsch Indië*, by Wullings; the *Regerings-almanak voor Nederlandsch-Indië*; and annual reports.

NIASSA: see NYASSA.

NIB—NIBELUNGEN LIED.

NIB, n. *nīb* [Scot. *neb*, a sharp point: Norw. *nibba*, a sharp projecting rock: Icel. *nibba*, a promontory (see **NEB**): the point of anything, particularly of a pen; the beak of a bird. **NIBBED**, a. *nībd*, having a nib or point.

NIBBLE, n. *nīb'bl* [Dut. *knabbelen*, to nibble, to grumble: Ger. *knaupeln*; Low Ger. *knibbeln*, to gnaw, to nibble: Swiss, *knübeln*, to pick]: a little bite: V. to bite by little at a time; to continue to bite at gently and quickly, as a fish the bait; to carp at; to find fault with. **NIBBLING**, imp. *-blīng*: **ADJ.** biting or feeding by nibbles: N. a little bite; act of one who nibbles. **NIBBLED**, pp. *nīb'bld*. **NIBBLINGLY**, ad. *-blīng-lī*. **NIBBLER**, n. *-b.ēr*, he or that which nibbles; a carper.

NIBBY, *nīb'bē*, **ANTONIO**: Roman archæologist of high celebrity: 1792–1839, Dec. 29. He was one of those who, following Winckelmann, made an elaborately minute investigation of the remains of antiquity their special study. The first work that made him known was his translation of Pausanias, with antiquarian and critical notes. In 1820 he was appointed prof. of archæology in the Univ. of Rome. In the same year appeared his ed. of Nardini's *Roma Antica*; and 1837–8 his learned and admirable *Analisi Storicotopografico-antiquaria della carta de Contorni di Roma*, to which was added (1838–40) a description of the city of Rome. Among his writings are *Le Mura di Roma diseguate da W. Gell*, and a large number of valuable treatises on the form and arrangement of the earliest Christian churches, the Circus of Caracalla, the Temple of Fortuna at Praeneste, the graves of the Horatii and the Curiatii, etc.

NIBELUNGEN LIED, n. *nīb'ēl-ūng'ēn lēd*, or 'Nibelunge Not,' as the words are written in the oldest manuscripts: the 'Lay of the Nibelungen'—the most ancient existing monument of German epic poetry, forming the chief traditionary record of the romantic deeds and sentiments of the heroes of German folk-lore—one of the most finished specimens of the genuine epic of Germany belonging to the middle ages. It is in the Middle High German dialect. There are 20 more or less perfect manuscript copies of this curious poem, the earliest of which belong to the beginning of the 13th c., from which period till the middle of the 16th c. it had the greatest popularity among Germans of all classes. Nothing is known of the author or authors of the work beyond the fact that it was put into its present form by a wandering minstrel in Austria about or before 1210, the date of the oldest accredited manuscript. According to W. Grimm and Lachmann's critical analysis of the poem, it is in itself a compilation of pre-existing Norse songs and rhapsodies, strung together into one whole on a plan remarkable for grand simplicity, though less skill is shown in some instances in the manner in which the several parts are connected. In the more authentic mss., the poem consists of only 20 parts; and it is conjectured that the latter portions of the epic,

given only in some of the texts, as that of St. Gall, are from later compilers. The epic cycle embraced in the N. may be more specially regarded as the fusion of the history of the mythical people, called in the poem the Nibelungen, with five leading groups of myths, in which are incorporated the adventures of some of the most universally popular personages belonging to the semi-historic mediæval German folk-lore—e.g., the hero Siegfried, with his mantle of invisibility, and the lovely Icelandic heroine Brunhilt; King Günther of Burgundy, and his fair sister Kriemhilt, wife of Siegfried; Haco of Norway, Dietrich (Theodoric the Great, King of the Ostrogoths) of Berne (Verona), and Etzel (Attila), King of the Huns. The loves and feuds and the stormy lives and violent deaths of these national heroes and heroines are skilfully intertwined in the N., and artistically made to centre round the mythical treasure of the Nibelungen, which, after the murder of Siegfried, who had brought it from the far north, is secretly buried by his murderer Haco beneath the Rhine, where it still remains. The poem, in its rude but strict versification, tells the tale of Kriemhilt's vengeance for her husband's death with a passionate earnestness that carries the sympathies of the reader with it, until the interest culminates in the catastrophe of the fierce battle between the Burgundians and Huns at the court of Etzel, whose hand Kriemhilt has accepted, the better to accomplish her purposes of revenge. The tale of horrors fitly closes with the murder of Kriemhilt herself, after she has satisfied her vengeance by slaying with Siegfried's sword his murderer Haco. This tale kept firm hold on the imaginations of the people, till the taste for polemic writings, fostered, if not created, at the period of the Reformation, caused this as well as many other treasures of folk-lore to be almost forgotten. Attention was, however, again drawn to it in the 18th c., by the publication of detached portions of the poem by Bodmer, *Chriemhilden-Rache* (Zurich 1751), and by Müller in his *Sammlung deutscher Gedichte aus dem 12.—14. Jahrh.* (Berl. 1782); but it was not till comparatively recent times that the value of the work in an historical and philological point of view was recognized. Lachmann made known the result of his investigations 1826. His views were supported by Müllenhoff and Rieger (1856). Holtzmann (1854), on the other hand, asserted that the longest version is the more ancient, and was followed by Zarneke, Hermann, and Fischer. Pfeiffer tried, 1862, to prove that the author of the present N. was the Austrian Von Kürenberg (about 1140). See Paul's statement of the case in *Die Nibelungenfrage* (1877). All the MSS. of the N. comprise another poem, under the title of *Die Klage*, which treats of the burial of the heroes who fell in the conflict at Etzel's court, and the laments composed in commemoration of that event. It is of greater antiquity than the N., and, like it, the work of an unknown author. A critical analysis of the N. is in Carlyle's *Miscellaneous Essay*.

NICÆA--NICARAGUA.

NICÆA : see NICE.

NICARAGUA, *nīk-ar-â'gwâ* or *nē-kâ-râ'gwâ* : republic in Central America, bounded n. by the republic of Honduras, w. by the Caribbean Sea, s. by the republic of Costa Rica, e. by the Pacific: lat. $10^{\circ}45'$ — 15° n., long. $83^{\circ}20'$ — $87^{\circ}30'$; about 58,500 sq.m.; pop. (1900) 500,000, of whom 13 per cent. are whites, 4 per cent. negroes, the rest Indians and Mestizoes. These figures are official, but there are some signs that they are understated. The e. coast-line, on the Caribbean Sea, is about 230 m.; its w., on the Pacific, about 200 m. N. is traversed by two ranges of mountains—the western, which follows the Pacific coast-line at a distance of 10 to 20 m.; and the eastern (part of the great range of the Cordilleras), which runs nearly parallel to it, and sends off several spurs toward the Caribbean Sea. The western is generally high and volcanic, but sinks at times almost to the level of the plains. Between the two ranges lies a great interior basin, containing the lakes of N. (q.v.) and Managua. The principal rivers are the Rio Coco, or Segovia, forming part of the boundary between Honduras and N.; the Escondido, or Blewfields; and the San Juan—all flowing into the Caribbean Sea. The e. coast of N. is called the Mosquito Coast. The country is in many places densely wooded—the most valuable trees being mahogany, logwood, Nicaragua-wood, cedar, and Brazil-wood. The pastures are excellent, and support vast herds of cattle. The chief products are sugar-cane (softer and juicier than the Asiatic variety), cacao, cotton, coffee, indigo, tobacco, maize, and rice, with nearly all the fruits, etc., of the tropics—plantains, bananas, tomatoes, bread-fruit, arrow-root, citrons, oranges, limes, lemons, pine-apples, guavas, etc. The chief vegetable exports are sarsaparilla, aloes, ipecacuanha, ginger, copal, gum-arabic, caoutchouc, etc. The n. part of N. is rich in minerals—gold, silver, copper, iron, and lead; but the mines are not so carefully worked now as under the Spaniards. The incessant political distractions of the country have notoriously almost destroyed its material prosperity. The trade is chiefly with Great Britain. In 1891 the exports amounted to \$3,646,015; imports to \$3,517,450. The seat of govt. is Managua (pop. 30,000), largest town and former cap. is St. Leon (pop. 45,000). The town of N. (q.v.) has pop. 8,500.

N. was discovered 1521 by Gil Gonzales de Avila, and conquered by Pedro Arias de Avila, gov. of Panama, 1522. In 1821—the great year of revolution in Central America—it threw off allegiance to Spain, and, after a desperate and bloody struggle, secured its independence by the help of the 'liberals' of San Salvador. N. now became the second state in the federal republic of Central America, but, on the dissolution of the union 1839, became an independent republic. 1847–8 a dispute broke out between N. and Great Britain, about the Mosquito Coast, which led to some hostilities, and was not settled till 1860. Meanwhile, 1855, a civil war had broken

NICARAGUA—NICCOLINI.

out between the so-called 'conservatives' and 'liberals,' which resulted in the victory of the 'liberals,' who were, however, obliged to call in the help of the afterward notorious Col. William Walker.

The new constitution of the republic of N. was proclaimed 1894, July 4. It vests the legislative power in a congress of one house of 40 representatives elected for a term of 2 years by universal suffrage, and the executive power in a pres. elected for a term of 4 years. Gen. Santos Zelaya was elected pres. for the term 1894-98. The chief religion of the people is the Rom. Cath.

NICARA'GUA, LAKE (native, *Cocibolca*): sheet of fresh-water in the republic of Nicaragua, 110 m. long and 30 to 50 broad. Its elevation above the Pacific, from which it is separated by a low range of hills—at one point only 48 ft. higher than the lake itself—is little more than 100 ft. The principal rivers flowing into it are the Mayales and Malacoloja on the n., and the Frio on the s.; the only one flowing out is the San Juan (formerly *Usaquadero*), which unites it with the Caribbean Sea. Its islands are numerous, mostly in groups. Of the numerous schemes for an interoceanic ship canal between the Atlantic and Pacific, that which adopted a route by way of the San Juan river and Lake N. has long been prominent. It has had more favor in the United States than the M. Lesseps canal from Limon to Panama. See INTEROCEANIC SHIP CANAL.

NICARA'GUA, or RIVAS, *rē'vâss*: town of the republic of Nicaragua (q.v.), Central America, on the w. shore of the Lake N. (q.v.), 35 m. s.s.e. from Granada. It has not much commerce, the lake commerce being carried on chiefly by Granada. Pop. 8,500.

NICCOLA' PISA'NO: see PISANO.

NICASTRO, *nē-kâs'trō*: town of s. Italy, province of Calabria, beautifully situated 24 m. s. of Cosenza, w. of the Apennines, on the margin of the coast plains, and commanding views of the sea. It is the see of an archbishop. There are hot springs in the vicinity. Pop. stated at 7,000 and at 10,200.

NICCOLINI, *nîk-ko-lē'nē*, GIOVANNI BATISTA: poet: 1785-1861; b. in the vicinity of Pisa; of a noble but impoverished family. N.'s first literary efforts were full of promise, and in 1810 he was crowned by the Crusca Academy. He was appointed sec. of the Acad. of Fine Arts, where he lectured on history and mythology. In 1805 the Grand Duke Ferdinand appointed him librarian in the Pitti Palace; but this office he resigned to escape the servility of court dependence. In 1827 appeared his noble work, *Antonio Foscarini*. In 1844 N. published anonymously his best poem—*Arnoldo da Brescia*—and nothing finer has been written in modern Italian, whether as a classical creation, or as a work of glowing patriotism. N. died at Florence.

NICE, a. *nīs* [OF. *nicz*, slothful, dull, originally 'ignorant': F. *nice*, foolish, simple: Prov. *nesci*; Port. *nescio*: Sp. *neccio*, foolish, imprudent: L. *nesciūs*, ignorant: comp. Gael. *nais*, modest, lovely; *neas*, noble]: foolishly particular; over-regard to trifling matters; attentive to minutiae; sweet or very pleasant to the taste; accurate; discriminating; requiring scrupulous exactness, as a nice point; fastidious; showing great delicacy; refined; pleasing; in *OE.*, luxurious; wanton; trivial; unimportant. NICELY, ad. *nīs'li*, delicately; daintily; accurately; well; cleverly; in the best manner. NICENESS, n. *nīs'nēs*, state or quality of being nice; pleasantness to the sense; extreme delicacy; minute exactness; accuracy. NICETY, n. *nīs'ē-ti*, the quality of being nice; exactness in treatment; fastidious delicacy; minuteness, as of observation or discrimination; precision; delicate management; something new or delicate, as a dainty dish of food; a delicacy. NICETIES, n. plu. *-tiz*, dainties or delicacies of the table. NICE DISTINCTION, one that is taken by over-refined reasoning. A PERSON NICE IN FOOD, a person over-particular in the choice of food. MORE NICE THAN WISE, more anxious in giving attention to small matters, than to more important concerns. *Note.*—The singular changes in the sense of NICE may have arisen in part from confusion with *OE.* *nesh*, denoting 'tender, soft, delicate'—see Skeat.—*SYN.* of 'nice': delicate; fine; exquisite; tender; dainty; delicious; precise; correct; exact; scrupulous; particular; finical; punctilious; squeamish; effeminate; foolish; weak; silly; gratifying; delightful; agreeable; handsome.

NICE, *nēs*, or NICÆA, *nī-sē'a*: formerly a city of Bithynia, in Asia Minor, on the e. shore of Lake Ascania. It was built, or rather rebuilt (for an older town had existed on its site), by Antigonus, son of Philip, B.C. 316, and received the name of Antigoneia, which Lysimachus changed to Nicæa, in honor of his wife. It was a handsome town, and of great importance in the time of the Roman and Byzantine emperors; all the streets crossed each other at right angles, and from a magnificent monument in the centre the four gates of the city were visible. It is famous in ecclesiastical history for two councils held in it, the First and Seventh Ecumenical Councils.—The FIRST COUNCIL OF N., A.D. 325, was convened by Emperor Constantine, in concert, according to Rom. Cath. historians, with the Roman pontiff, to define the questions raised in the Arian controversy (see ARIUS). The supporters of Arius at first are said to have numbered more than 20; but ultimately the decree condemning him was subscribed by the whole body of the council, the number of dissentients being, according to the highest computation, only five, while the most probable account reduces it to two. The NICENE CREED (q.v.) was adopted in this council. In addition to the Arian question, the Council of N. deliberated also on the Meletian Schism, which at that time divided the church of Egypt, and the particu-

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lars of which have formed a subject of recent controversy. The decree of N. appears to have been founded on a compromise, but did not effectually suppress the schism. The decree of N. on the celebration of Easter was of wider application, and met universal acceptance, the few recusants being thenceforward called Quarto-decimans (q.v.). This council also enacted 20 canons of discipline. For a minute and picturesque description of this council, see Dean Stanley's *History of the Eastern Church*.—The SECOND COUNCIL OF N., called also the Seventh Ecumenical Council, was assembled under Empress Irene (787), regent during the minority of her son Constantine to reconsider the subject of Images: see IMAGE-WORSHIP. In the West, the question of the acceptance of this council was the subject of considerable controversy, arising, in great measure, from a grossly erroneous Latin translation of the acts, which for a time obtained extensive circulation.

NICE, *nēs* (Ital. *Nizza*): chief town, since 1860, of the dept. of the Alpes Maritimes, France; on both sides of the river Paglione, 100 m. s.s.w. of Turin, and about the same distance e.n.e. of Marseilles. Pop. (1891) 88,273; (1901) 105,109. It consists of three principal parts—the *Quartier de la Croix de Marbre*, or *New Town* (on the right bank of the Paglione), the *Old Town*, and the *Port*. The first of these is frequented by foreigners, particularly English (whence its name 'English town'). It is close to the river; has a handsome quay filled with gay shops, and a splendid square called the *Jardin Public*. Two bridges over the Paglione connect it with the Old or Upper Town, which extends back to the foot of a hill called the *Castle Hill*. The *Old Town* is excessively dirty, and has narrow, reeking streets, with macaroni and confectionery shops, grocery establishments, slaughter-houses, etc. The *Port*, almost separated from it by the *Castle Hill*, is crowded with a seafaring population. The harbor admits vessels drawing 15 ft. of water, but is difficult of entrance. The *Castle Hill*, an isolated mass of limestone 800 ft. high, formerly crowned by a strong castle now in ruins, is laid out in public gardens, and affords an extensive and splendid prospect seaward. The chief public buildings are in the *Corso*, or in the adjoining streets, in one of which is an English library and reading-room. There is an Episc. and a Presb. church in N., and an English cemetery. The most attractive promenade in the *Old Town* is the *Terrace*, 15 to 20 ft. high, erected as protection to the town against a stormy sea. But the most agreeable and fashionable drive and promenade is the *Promenade des Anglais*, extending a mile along the shore from the right bank of the Paglione, and skirted on one side by elegant villas and hotels. Beggars are numerous, owing, doubtless, to the great influx of visitors, from all parts of the world, during winter. N. is sheltered toward the n. by hills that rise in stages back to the Alps. The mercury seldom falls below freezing, and snow is practically un-

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known. Rain is plentiful, but usually falls rapidly and heavily, leaving the skies soon clear again. Autumn is the pleasantest season, with fewest undesirable changes of weather. The climate of N. has for 2,000 years been reputed favorable to pulmonary troubles; but to heart-disease or nervous disorders it is the reverse of beneficial. Fine as the usual winter and spring weather of N. is, it is exposed to the n. wind, or *Tramontane*, or to the n.w. wind, or *Mistral*, which, during these seasons, sometimes bring a temperature which in England would be considered cool, or even cold, in Apr. or Oct.: these winds bring intolerable dust-storms; but, fortunately, the mountains usually stop them. The *Quartier Carabacel* is the most sheltered part of the place, therefore the best for an invalid. Dust and bad drainage are the drawbacks to the pleasantness of N.; but this is true with regard to most of the places of winter resort in the south. The mean Jan. and Feb. temperature is 47°, equal to that of Apr. in England; March is 52°; April 58°, about the same as June in England, or July in Scotland.

The ancient Ligurian town of Nicæa, founded, it is said, by a colony of Phocæans from Massalia (Marseille), became subject to Rome B.C. 216. It probably occupied the Castle Hill, rather than the site of the present city. Subsequently it passed into the hands of the Goths, Burgundians, Visigoths, kings and counts of Arles, the Angevine sovereigns of Naples, and the dukes of Savoy (1388), in whose family it remained till 1860, when it was ceded to France.

NICENE, a. *nī-sēn'*: pert. to the town of *Nice* or *Nicæa*, in Asia Minor: denoting a celebrated council held there, A.D. 325. NICENE CREED, summary of Christian faith drawn up by the Council of Nice, with the additions made at the Council of Constantinople 381: a detailed statement of doctrine, which forms part of the liturgy of the Roman, Oriental, and Anglican churches, and is also received as a formulary by some other Protestant communions. It was drawn up principally by Hosius of Corduba, and is called by the name of the Council of Nice, though nearly one-half of its present clauses formed no part of the original Nicene formulary; while, on the other hand, that document contained a series of anathemas condemnatory of specific statements of Arius, which find no place in the present so-called Nicene creed. (See CREEDS AND CONFESSIONS: also COUNCIL, or SYNOD.) The distinctive characteristic of the creed drawn up in the council was the word *Homoousios*. (See HOMOIUSIAN.) Its clauses correspond (except in a few verbal details) with those of the modern formulary, as far as the words, 'I believe in the Holy Ghost;' after which follow the anathemas referred to above. The remaining clauses of the present creed, though they seem to have been in public use earlier, were formally added in the First Council of Constantinople (381), with the excep-

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tion of the clause, 'And from the Son,' which was introduced in various churches of the West in the 5th and 6th c.; and ultimately its formal embodiment in the creed has continued a subject of controversy with the Greeks to the present day: see GREEK CHURCH. This creed appears to have been used in the public liturgy from the latter part of the 5th c. Its position in the liturgy varies in the different rites. In the Roman liturgy it is read on all Sundays, feasts of our Lord, of the Virgin Mary, apostles' days, and all the principal festivals, but not on week-days or the minor saints' days.

Several Arian creeds, in opposition to that of Nice, were drawn up at Sirmium and elsewhere (see LIBERIUS), but none of them met general acceptance.

NICHE, n. *nīch* [F. *niche*—from. It. *niechia*, a recess in a wall for a statue]: cavity or recess in a wall, as for a statue, bust, or ornamental figure. In classic architecture, niches are generally square recesses, with canopies formed by small pediments. In Gothic architecture, the niche is one of the most frequent and characteristic features; the doorways, buttresses, and every part of the buildings being in many instances ornamented with niches and statues in endless variety. NICHED, a. *nīcht*, having a niche, or put into one.

NICHIREN: religious leader: b. Kominato, province Awa, Japan, about 1222. He was versed in various languages, gave many years to the study of the writings of early followers of Buddha, and became the founder of a large and powerful sect of Buddhists in Japan. He travelled from place to place, preaching, establishing societies, and building temples. Incurring the displeasure of the govt., he was sent into exile at various times; but he soon returned, and his zeal never abated. He led the great revival of Buddhism which in the 13th c. swept over the empire, and wrote several religious books, some of which are still valued. Every year, thousands of pilgrims, rich and poor together, visit Ikegami, where he died. Though his followers do not hold the highest form of doctrine, they are the most active and intelligent of the present sects of Buddhists in Japan.

NICHOL, *nīk'ol*, JOHN, LL.D.: 1833, Sep. 8—1894, Oct. 11; b. Montrose, Scot.; son of John P. N., LL.D. He graduated from the Univ. of Glasgow 1855, and four years later from Oxford. In 1861 he returned to Glasgow as prof. of Eng. literature. He was a very successful teacher, and gave lectures in the principal cities of Scotland and England. During the civil war in this country, he was an outspoken friend of the Union cause. In theology, he belongs to the 'Broad Church' party. Besides his contributions to the leading reviews, he has written several books, among which are: *Hannibal*, a drama; *Tables of European Literature and History*; *Tables of Ancient Literature and History*; *The Death of Themisto-*

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cles, and Other Poems; and numerous articles in the *Encyclopædia Britannica*, 9th ed., of which one, on *American Literature*, has been issued separately.—His father, JOHN PRINGLE N., LL.D. (1804, Jan. 13—1859, Sep. 19), b. Scotland, studied theology, became prof. of astronomy in the Univ. of Glasgow, and a noted lecturer on astronomical subjects. He wrote *Cyclopædia of the Physical Sciences*, and other books.

NICHOLAS, *nik'o-las*, I., Pope of Rome: d. 867, Nov. 13 (pope 858–867); of a noble Roman family: one of the powerful and commanding figures in the pontifical line. On the death of Benedict III., N. was elected to succeed him, and was consecrated in St. Peter's Church, in the presence of Ludwig II., Emperor of Germany. The earliest noticeable incident of his pontificate is his conflict with Photius (q.v.), who had been intruded into the see of Constantinople after the unjust deprivation of Ignatius. N. demanded from the emperor the restoration of Ignatius, as well as the withdrawal of certain attempted invasions of the jurisdiction of the West. On the refusal of his demands, N. excommunicated Photius (see GREEK CHURCH); and that patriarch, in return, assembled a council at Constantinople, and, retorting upon his rival the same sentence, alleged that, with the translation of the seat of civil sovereignty from Rome to Constantinople, the ecclesiastical supremacy likewise was transferred. Emperor Michael supporting Photius in his claim, N. failed to command submission to his sentence; nor was it till the following reign (that of Basil, the Macedonian) that Photius was deposed, and Ignatius restored to his see. Meanwhile, however, N. had been embroiled with Emperor Ludwig. The pope had been appealed to by the unjustly divorced wife of Ludwig's younger brother, Lothaire, King of Lorraine, and had appointed legates to inquire into and report upon the case; and the legates having exceeded their powers and violated the truth by giving a sentence in favor of Lothaire, who wished to discard his wife and marry his mistress, the pope declared their sentence null, and excommunicated the two abps. who had been active in securing the evil sentence and had audaciously brought it to Rome. Ludwig espoused their cause, and marched his troops to Rome, in order to enforce satisfaction. After some hostile demonstrations, the emperor, terrified, it is said, by his own sudden illness, and some fatalities which befell his followers, desisted from the enterprise, and withdrew his troops, having obtained from N. no concession. The pope thus maintained the right, in the face of a letter of confession to him from the rejected wife herself, urging Lothaire's claim. N. disallowed this, as plainly extorted by force and fraud; and only his death saved Lothaire from being utterly humiliated.

NICHOLAS V. (TOMMASO PARENTUCELLI, *tom-mà-zo pâ-rên-tô-cê 'ê*), Pope of Rome: 1389–1455, Mar. 24 (pope 1447–55); b. Sarzana, near Spezzia; son of a physician. He was educated at Florence and Bologna, and, having fixed his residence in Bologna, he was eventually named bp. of that see by Pope Eugenius IV. During the troubled period of the Councils of Basel and Florence, and in the difficult negotiations with the German and other churches which arose therefrom, he conducted himself with such ability and prudence that on the death of Eugenius IV. he was chosen to succeed him, 1447, Mar. 6. At this time, the antipope, Felix V., still maintained himself, though supported by a very small party; but N. prevailed on him to abdicate, and thus restored the peace of the church, 1449. In the judgment of the literary world, however, the great distinction of the pontificate of N. is in the eminent service which he rendered to that revival of letters which dates from his age. The comparative repose in which he found the world at his accession enabled him to employ, for discovery and collection of the scattered masterpieces of ancient learning, measures beyond the resources of his predecessors. He dispatched agents to all the great centres, both of the East and of the West, to purchase or to copy every important Greek and Latin manuscript. The number collected by him was above 5,000. He enlarged and improved the Roman university. He remodelled, and may be said almost to have founded, the Vatican Library. He caused translations to be made into Latin of most of the important Greek classics, sacred and profane. He invited to Rome the most eminent scholars of the world, and extended his especial patronage to those Greeks whom the troubles of their native country drove to seek a new home in the West. Alarmed by the progress of the Turkish arms in Asia, he endeavored to arouse the Christian princes of Europe to the duty of succoring their brethren of the East; but the age of enthusiasm was past, and he was forced to look on inactively at the fall of Constantinople 1453. This event, by forcing a large number of learned Greeks to repair to Italy and other countries of the West, contributed powerfully to that progress of learning which N. had deeply at heart; but he scarcely lived to enjoy this result, having died two years later, at the comparatively early age of 57.—He must not be confounded with an antipope of the same name, Peter de Corbario, who was set up 1328, by Ludwig of Bavaria, in antagonism to John XXII. (q.v.). See NICOLAS, ST.

NICHOLAS I. (properly NIKOLAI PAULOVITCH, *nê-ko-lâ'ê* or *nê-ko-lî' pâv'lo-vîch*). Emperor of Russia: 1796, June 25—1855, Feb. 18 (reigned 1825–55); b. St. Petersburg; third son of Paul I. He was very carefully educated under the eye of his mother, a pious but not broad-minded princess of Würtemberg; and subsequently applied himself to military studies and political economy, without, however, giving evidence of any nat-

NICHOLAS I.

ural capacity for these subjects. He visited England and other European countries 1816, and made a tour through the Russian provinces. 1817, July 13, he married Frederika-Louisa-Charlotte-Wilhelmina, eldest daughter of Frederick William III. of Prussia, and lived in domestic retirement till the death of Alexander I. (1825, Dec.), when, having awaited the formal resignation of his elder brother Constantine (who was unfit to govern the empire, and was aware of it), N. succeeded to the throne of Russia. A long-prepared military conspiracy broke out immediately after his accession, which he, under sincere but ill-controlled alarm, suppressed with great vigor and cruelty. Capital punishment, which had been abolished by Empress Elizabeth, was revived, for infliction on the leaders of the insurrection. The rebels were hunted down with merciless energy, and in no case, even after the rebellion ceased to be in the least degree dangerous, was their punishment commuted. Instead of pursuing the course on which Alexander had entered—cultivating the mind of the nation, so as to base his government on education and intelligence—N., after a brief ebullition of reformatory zeal, reverted to the ancient policy of the czars—absolute despotism, supported by mere military power. His first great measure, the codification of Russian law, was commenced 1827, completed 1846.

Soon after his accession, a war with Persia commenced, but it was ended 1828, Feb. 28, by the peace of Turk-manshai, which gave considerable territory to Russia. In the same year he entered on a war with Turkey, in which victory, though at enormous cost, constantly attended his arms; and the peace of Adrianople (q.v.) obtained for Russia another increase of territory, the free navigation of the Danube, with the right of free passage between the Black and Mediterranean seas. The political movements of 1830, in w. Europe, were followed by a national rising of the Poles, which was suppressed after a desolating contest of nine months, in which the utmost efforts of all the military resources of Russia were required. N. punished the rebellion by converting the kingdom of Poland into a mere Russian province, and strove to extinguish the Polish nationality. This policy, however, was viewed with great dissatisfaction throughout Europe, and the vanquished Poles were everywhere regarded with general sympathy. Russia, by N.'s mode of government, became more and more separated from the fellowship of the western nations. Intellectual activity was, as far as possible, restrained to things merely practical, education limited to preparation for the public service, the press was placed under strictest censorship, and all means were used to bring the whole mind of the nation under official guidance. His Panslavism (q.v.) also prompted him to Russianize as much as possible all inhabitants of the empire, and to convert Rom. Catholics and Protestants to the Russian Greek Church, of which the czar is the head. The independ-

ence of the mountaineers of the Caucasus was inconsistent with his schemes, and war was consequently waged against them with the greatest energy and perseverance, though with little success, and at cost of immense sacrifices of money and lives. The extension of British influence in central Asia was viewed by him with alarm, and he attempted to counteract it by various means, among which was the expedition for the conquest of Khiva, 1839, which failed so signally (see *KHIVA*). 1844-46, he visited England, Austria, and Italy. During the political storm of 1848-9, he abstained from interference, watching, however, for an opportunity of doing so with advantage to Russian interests. The opportunity was at last found in the request of the emperor of Austria for his assistance to quell the Hungarian insurrection. This good service rendered Austria, as he thought, a faithful and firm ally. He succeeded at the same time in drawing closer the bonds of alliance between the Russian and Prussian monarchies—a proceeding fraught with the most mischievous consequences to the latter power. The re-establishment of the French empire still further tended to confirm these alliances, and led N. to think that the time had at length come for carrying into effect the hereditary Russian scheme for absorption of Turkey; but the unexpected opposition of Britain and France, and his own invincible repugnance to give up his long-planned scheme of conquest, brought on the Crimean war, during which he died at St. Petersburg, of atrophy of the lungs; but his death was undoubtedly hastened by chagrin at the repeated defeats which his arms sustained, and by over-anxiety and excessive labor to repair his losses. He was remarkable for temperance, frugality, and patriotism, but equally for vanity and ostentation. He was fanatically beloved by his Russian subjects, and was at the same time regarded by them with awe—a tribute to his lofty stature and imperial deportment, which gave him most intense pleasure. This extreme vanity seems, to some extent, to have affected his mind, and to have been partly the cause of his political blundering.

NICHOLAS II.

NICH'OLAS II. (ALEXANDROVITCH): Czar of Russia: 1868, May 18— ———; b. St. Petersburg. His father was Czar Alexander III., and his mother a daughter of the King of Denmark. He succeeded to the throne 1894, Nov. 1, immediately on the death of his father, and was formally crowned at Moscow 1896, May 26. He was married 1894, Nov. 26, to Princess Alix of Hesse-Darmstadt. The marriage was hastened in accordance with the last wishes of Alexander III., the betrothal having been announced by the Emperor of Germany. N. II. is by blood the nephew of the Prince of Wales and first cousin of the Duke of York, while his father's sister is the wife of another British prince, the Duke of Coburg, formerly known as the Duke of Edinburgh, son of Queen Victoria. His wife is a granddaughter of Queen Victoria, being a daughter of the late Princess Alice of England. The coronation ceremonies at Moscow were attended by representatives of nearly every nation of the earth, and soon thereafter the czar and czarina visited the principal courts and nations of Europe. The early education of N. II., conducted under Gen. Danilovitch, gave him an extensive knowledge of modern languages and history and a fair acquaintance with science. He is familiar with the literature of France and England. Of classics he was taught nothing beyond the rudiments, but in civil law and finance he had thorough grounding. In 1886 he entered an infantry regt. of the guard and served in various capacities, becoming a useful and popular officer. During the great famine 1891-2 he was pres. of the famine-relief commission; he was also pres. of the imperial commission for construction of the Trans-Siberian railway. In 1891, with Prince George of Greece as a companion, he started on a trip around the world. At Otsu, Japan, he was attacked by an infuriated Japanese policeman, but by Prince George, who overcame the assailant, N. was saved from being seriously wounded. The projected trip of the czarowitz was then abandoned by order of the czar. The czarowitz then proceeded by road to cross Siberia to St. Petersburg, a journey of about 5,000 m. In 1893 he was present at the wedding of the Duke and Duchess of York. He made a long stay in England, visiting the queen, who is said to have regarded him with special favor. At the time of the accession of the young czar hopes were entertained in many quarters—and are still expressed by some—that he would inaugurate reforms of a liberal tendency. These hopes were somewhat dashed in 1895, Jan. 29, by a particularly clear and unequivocal announcement from his own lips. On the date mentioned he received many deputations who had come to congratulate him on his marriage, and to whom, among other things, he said: 'Let all know that, in devoting all my strength to the welfare of the people, I intend to protect the principle of autocracy as firmly and unswervingly as did my late and never-to-be-forgotten father.' He was bitterly censured by Russian and other reformatory parties for his assertion of absolutism.

NICHOLAS I.—NICHOLS.

NICH'OLAS I., Prince of Montenegro: born 1841. He received a good preparatory education, and graduated from the military acad. at Paris when less than 20 years of age. On the assassination of his uncle, Prince Danilo, 1860, N. succeeded the throne. He travelled in various European countries, and on his return reorganized the army and introduced improvements in educational and political affairs. By the Berlin treaty 1878, Montenegro, which had been a dependency of Turkey, became an independent province, with a considerably enlarged area. Though a council is supposed to share in the govt., the rule of the prince is practically absolute. Throughout most of his career, he has ruled wisely, and has shown much skill in his intercourse with foreign powers. The great blot upon his fame is the massacre of the inhabitants of Gusinje, which was pillaged by his soldiers 1879.

NICH'OLAS, GEORGE: statesman: 1755-99; b. Hanover, Va.; son of Robert Carter N. He graduated at William and Mary 1772; was maj. of the 2d Va. regt. 1777, and afterward col. He was an active member of the convention which ratified the federal constitution, and an influential member of the house of delegates. Removing to Ky. 1790, he was chosen a member of the convention which framed the state constitution at Danville 1792, Apr. 1. The constitution was largely his work. He was the first atty.gen. of Ky., and was a resident of that state at the time of his death.

NICH'OLAS, SAINT; or **SANTA CLAUS**: see **NICOLAS, SAINT**.

NICH'OLAS, WILSON CARY: 1757-1820, Oct. 10; b. Hanover, Va.; son of Robert Carter N. He graduated at William and Mary College. He was an officer in the revolutionary army, and commanded Washington's life-guard until its disbandment 1783. He was a member of the convention which ratified the federal constitution, and represented the democratic party in the U. S. senate from 1800, Jan. 3, until his resignation 1804, Dec. 17. He was collector of the ports of Norfolk and Portsmouth in 1804-07; and was elected, 1814, gov. of Va. According to the records of that period, the N. family were a powerful factor in state politics, and strong supporters of the Jefferson administration.

NICHOLS, nīk'olz, EDWARD TATNALL: naval officer: 1823, Mar. 1-1886, Oct. 12; b. Augusta, Ga. He was appointed to the U. S. Naval Academy 1836, and became passed midshipman 1842, lieut. 1850, commander 1862, capt. 1866, commodore 1872, rear-adm. 1878, and was placed on the retired list 1885. He held command of the U. S. steamer *Winona* at the beginning of the civil war, and took part in the bombardment of Forts Jackson and St. Philip, the latter surrendering to him 1862, Apr. 28. In the passage of the batteries at Vicksburg, he was commended for ability, steadiness, and sound judgment. While commanding the U. S. steamer *Mendota*, 1864, June, he engaged the Confederate battery at Four Mile Creek, James river, Va. He died at Pomfret, Connecticut.

NICHOLS—NICHOLSON.

NICH'OLS, WILLIAM AUGUSTUS: 1818, May 12—1869, Apr. 8; b. Philadelphia. He graduated from West Point Milit. Acad. 1838, received various promotions, in the Mexican war was brevetted major for brilliant service at Molino del Rey, became capt. 1852, and lieut.col. 1861. In the civil war, he served as adjt.gen. of various depts., and asst. of the adjt.gen. at Washington 1862-64; was promoted col. and brevetted brig.gen. 1864, and maj.gen. the following year. He was appointed adjt.gen. of the dept. of Mo., and held this office till his death, which occurred at St. Louis.

NICHOLSON, *nīk'ol-son*, Sir FRANCIS: born England; d. 1728, Mar. 5. After serving as lieut.gov. of N. Y. under Andros, he became gov. 1687, and held the office two years; was gov. of Va. 1690-92, of Md. 1694-99; and in the latter year again became gov. of Va., holding the appointment six years. He commanded the expeditions to Nova Scotia 1710 and to Canada 1711; was gov. of Nova Scotia five years from 1712, and of S. C. 1721-25. He was knighted 1720, and promoted lieut.gen. 1725. He died in London.

NICH'OLSON, JAMES: 1737-1804, Sep. 2; b. Chestertown, Md. His father was an officer under the British govt., and received a grant of land in Va. Young N. became a sailor, was present at the bombardment of Havana 1762, and lived in New York 1763-71. At the opening of the revolution, he joined the American navy; was capt. of the *Defence* 1775, with which he seized several vessels which the British had captured. He was placed in command of the *Virginia* 1776, and the following year became commander-in-chief of the navy. His ship being blockaded in the Chesapeake Bay, he joined the land forces with his crew, and fought at the battle of Trenton. In attempting to reach the sea, his ship was stranded, and was seized by the British; but N. and nearly all his force escaped. While in command of the *Trumbull* 1780, he fought a desperate but indecisive battle with the *Wyatt*. The following year he was taken prisoner by the British, and was held captive till about the close of the war. He returned to New York, where he was commissioner of loans for the govt. from 1801 till his death.

NICH'OLSON, JAMES WILLIAM AUGUSTUS: 1821, Mar. 10—1887, Oct. 28; b. Dedhām, Mass.; son of Nathaniel D. N., and grandson of Samuel N. At the age of 17 he became a midshipman in the U. S. navy, was acting master of a vessel in the war with Mexico, was an officer of the *Vandalia* in Com. M. C. Perry's expedition to Japan, and 1857-60 assisted in the suppression of the slave trade on the African coast. In the beginning of the civil war, he commanded the *Isaac Smith* at the Port Royal expedition, and received honorable mention from Admiral Dupont for courage and skill. He was stationed at St. Augustine, Fla., 1862; was in the blockading squadron at Charleston, and with Farragut at the battle of Mobile Bay. He commanded a steamer in the Pacific 1865-6,

and the flag-ship of the Brazil squadron 1871-2. For four years from 1876, he was in charge of the navy-yard at Brooklyn, was in command of the European station 1881-83, and protected the U. S. consul and American residents at the British bombardment of Alexandria, Egypt, 1882. He was promoted lieut. 1852, commander 1862, capt. 1866, commodore 1873, rear-admiral 1881, and was retired 1883. Several European govts. presented him with medals and decorations. He died at New York.

NICHOLSON, JOHN: British general: 1821, Dec. 11—1857, Sep. 23; b. Dublin; son of a physician of considerable reputation in that city, who died when the boy had completed his 8th year. By his mother, a woman of strong sense and much practical piety, he was carefully educated. From his mother he seems to have imbibed a certain religious earnestness which was noted in him through life. At the age of 16 he arrived in Calcutta as an Indian cadet; and 1840 his regt. was ordered to Ghizni in Afghanistan, where, two years later, it was captured in the insurrection. N. regained his liberty, joined the relieving army, and later was stationed at Meerut, doing duty as adjt. of his regiment. After serving in the Sikh war of 1845, N., now a lieut., was appointed asst. to the resident at the conquered capital, Lahore, and thus transferred to the political branch of the service, in which most of his remaining years were passed; though during the Sikh rebellion of 1848 he greatly distinguished himself for daring and promptitude.

With short intermission for a visit to his aged and widowed mother, N. served several years as dep.-commissioner in the Punjab—mostly among the savage tribes of the frontier. His success in introducing law and order was marvellous; and the fear and reverence wrought by the force and massive personality of the man made him the object of a curious kind of hero-worship. So far was this carried, that a sect actually arose (Nikkul-Seynees) who consecrated N. as their Guru (or spiritual guide), and persisted—despite severe floggings regularly inflicted by the worthy man—in falling at his feet, and making him an object of divine honors.

The great mutiny 1857 brought N.'s great opportunity, and opened the brief career of glorious achievements in which he developed, in the eye of the world, the fulness of his military genius. In the saving of the Punjab, virtually India was saved to Britain; and, under Sir John Lawrence, N. perhaps did more than any other one man to hold the Punjab. He suggested and largely organized the famous movable column, by which mainly the work was done, and was appointed to command it; and, in his dealings with the suspected regiments of Sepoys, he showed a fine combination of boldness, subtlety, discretion, and astuteness. At Trimmu Ghaut, July 12 and 14, he brought to bay, and nearly annihilated, a large force of the declared rebels. Marching to reinforce Gen. Wilson, in the siege of Delhi, he arrived Aug. 7, and, with fiery and impatient energy, expedited the delayed

assault. After brilliant service in preliminary engagements, Gen. N. (for to this rank he had now attained) was selected for the post of honor in the final assault, and on the morning of Sep. 14 he led the first column of attack. After the troops had forced their way into the city, an unforeseen check occurred, and N., ever in front, exposed himself in the most fearless manner, to animate his men to advance. Conspicuous by his towering stature, he became the mark of the enemy's bullets, and fell, shot through the body. He lingered some days in great suffering, and died on the morning of the 23d. The joy of victory was clouded by his death; for it was felt that in John N., to use Lord Canning's expression, 'a tower of strength' had fallen. All who came fairly in contact with him were strangely impressed with the sense of a magnificent reserve of *power* in him. His nature was on one side as tender and affectionate as on the other it was strong and brave. The E. India Company voted a special grant of £500 a year to the mother who survived him.— See Kaye's *Lives of Indian Officers* (2 vols. Lond. 1867).

NICH'OLSON, JOHN B.: naval officer: 1783–1846, Nov. 9; b. Richmond, Va. He became midshipman U. S. N. 1800, July 4; lieut. 1812, May 20; commander 1817, Mar. 5; capt. 1828, Apr. 24; he afterward ranked as commodore. While serving as 4th lieut. of the *United States*, he assisted in the capture of the *Macedonian*. As 1st lieut. of the *Peacock*, at the time of her engagement with the *Epervier*, he brought the prize-ship into port. He was on terms of intimacy with Washington Irving, whose letters speak of him as 'Jovial Jack Nicholson.' He died at Washington, D. C.

NICH'OLSON, SAMUEL: 1743–1811, Dec. 29; b. Chestertown, Md.; bro. of James N. He was the first commander of the frigate *Constitution*; was lieut., with Paul Jones, on the *Bon Homme Richard*, at the time of her engagement with the *Serapis*; became capt. 1779, Sep. 17; on reorganization of the navy, was commissioned capt. 1794, June 10; was senior officer U. S. N. at his death. While cruising in command of the frigate *Deane*, 32 guns, 1782, he captured 3 British sloops of war and several other prizes. He died at Charlestown, Mass.

NICH'OLSON, WILLIAM CARMICHAEL: 1800–1872, July 25; b. Md. When only 12 years of age, he received a commission as midshipman in the U. S. navy; and when the *President* surrendered in the battle off Long Island, 1815, Jan., he was captured by the British. He was taken to England and held prisoner till the close of the war. He was in the Pacific squadron 1827, the Mediterranean squadron 1843, and was afterward at Boston, New York, and Memphis. In the E. India squadron, 1858–61, he commanded the *Mississippi*. In the latter year he was placed in command of the *Roanoke*, and had charge of the govt. marine asylum in Philadelphia. He was assigned to special duty during the civil war. He was promoted lieut. 1821, commander 1841, capt. 1855, commodore 1862. He died in Philadelphia.

NICHOLSON—NICK.

NICH'OLSON, WILLIAM RUFUS, D.D.: bishop of the Ref. Episc. Chh.: b. 1822, Jan. 8, Greene co., Miss. He graduated at Lagrange College, Ala., 1840; and after admission to holy orders in the Prot. Episc. Church, became successively rector of prominent churches in New Orleans, Cincinnati, Boston, and Newark, N. J. He joined the Ref. Episc. Church in 1874, and took charge of a church in Philadelphia. He was consecrated bishop in 1876, and afterward chosen dean of the theol. seminary of the Ref. Episc. Church in Philadelphia. Kenyon College conferred upon him the degree D.D.

NICIAS, *nĩsh'ĩ-as*: famous Athenian statesman and general during the Peloponnesian war: d. B.C. 414; son of Niceratus, a very wealthy citizen, who had acquired his fortune by working the silver mines at Laurium. N. belonged to the aristocratic party, and, after the death of Pericles, presented himself as the opponent of Cleon, the great popular or demagogic leader. N. was not a man of quick, brilliant, audacious genius, like Alcibiades; on the contrary, he was remarkably wary and cautious, even to timidity. Success generally accompanied his enterprises against the Spartans and their allies. B.C. 427 he captured the island of Minoa; next year, he ravaged the island of Melos and the coasts of Locris; the year following, he compelled the Spartan force in Sphacteria to surrender, and defeated the Corinthians. B.C. 424 he made havoc of part of Laconia, captured the island of Cythera, and achieved other successes. After the death of Cleon, he brought about a peace between the Spartans and Athenians, B.C. 421. Six years afterward, the Athenians, at the instigation of Alcibiades, resolved on a great naval expedition against Sicily. N. was appointed one of the commanders, though he had strongly protested against the undertaking. B.C. 415, in autumn, he laid siege to Syracuse, and was at first successful, but subsequently experienced a series of disasters; his fleet was destroyed, and his troops began a retreat toward the interior of Sicily. They were speedily forced to surrender, and N., was put to death. See Thirlwall's and Grote's Histories of Greece, and Plutarch's *Life of Nicias*.

NICK, n. *nĩk* [It. *nicchia*, a nick]: a cut or notch: V. to cut in nicks or notches; to notch. **NICK'ING**, imp. **NICKED**, pp. *nĩkt*.

NICK, n. *nĩk* [F. *nique*, a trick, hence a sleight or turn of hand: Ger. *nicken*, to nod, to wink]: the exact point or critical moment; a fortunate conjuncture; the winning throw or trick: V. to hit; to touch luckily; to perform by a slight artifice used at the lucky moment; to cozen; to defeat. **NICK'ING**, imp. **NICKED**, pp. *nĩkt*. **NICK OF TIME**, just as the notch was being cut in the tally; just in time; at the required moment. **IN THE NICK**, exactly. *Note.*—The origin of this sense of *nick* has also been assigned to the *nicking* or *notching* of tallies, or the *checking* of the names of students entering a classroom.

NICK, n. *nĭk*, or OLD NICK [Low Ger. *nikker*, the hangman, the devil, as, in the popular estimation, the great executioner prepared for the condemned at the day of judgment: Icel. *nikr*; AS. *nicor*, a water-god]: the devil.

NICKEL, n. *nĭk'ĕl* [Ger. *nickel*, a contraction for *kupfernickel*, false copper—that is, copper of *Nick* or *Nicholas*, name given to it by the miners, in derision, from their deeming it base ore of copper: Ger. *kupfer*, copper]: elementary body in the form of a metal of white or reddish-white color, and of great hardness; is ductile and malleable, and, like iron, is attracted by the magnet, and may be rendered magnetic. **NICKELIC**, a. *nĭk'ĕl-ĭk*, pert. to nickel. **NICKELINE**, n. *nĭk'ĕl-ĭn*, one of the chief ores of nickel. **NICKEL-GLANCE**, a grayish-white ore of nickel. **NICKEL-OGRE**, or **NICKEL-GREEN**, an arseniate of nickel of apple-green color. **NICKEL-SILVER**, white metal or German silver, a compound of tin and nickel.

NICK'EL (symbol, Ni; equiv. 58.8—sp. gr. 8.8): grayish-white glistening metal capable of high polish, of about the same hardness as iron, and, like iron, malleable and ductile. It has about the same fusibility as wrought iron, but is less readily oxidized than that metal, since it remains unchanged for a long time in a moist atmosphere, and is very little attacked by dilute acids. It is strongly magnetic, but loses this property when heated to 660° F. It dissolves in hydrochloric and dilute sulphuric acid with a development of hydrogen gas, and is very readily oxidized in nitric acid. In 1889 N. (also Cobalt) was reported to have been decomposed by Dr. Kruss of Munich.

N. occurs in the native state only in meteoric stones, in which it is generally present in association with the iron which forms the principal part of many of those masses. It is abundant in Saxony, Westphalia, Hungary, Sweden, etc., in the form of *kupfernickel* (so called from its yellowish-red color), a combination of N. and arsenic. The metal is obtained on the large scale (for making German Silver [q.v.] and other alloys, and for anodes for electro-plating) either from this compound or *speiss*, which is an impure arsenio-sulphide of N., formed during the manufacture of *Smalt* (q.v.), by complicated chemical processes. In small quantities, it may be obtained by reducing one of its oxides by means of hydrogen at a high temperature, or by exposing the oxalate to a high temperature in a crucible lined with charcoal.

N. forms two compounds with oxygen—viz., a protoxide, NiO ; and a sesquioxide, Ni_2O_3 , which is not basic, and may be passed without further notice. The *protoxide* occurs as greenish-gray powder, which exhibits no magnetic properties, and is insoluble in water: it is obtained by heating the carbonate or the *hydrated protoxide* in a closed crucible. The hydrated protoxide, NiH_2O_2 , is obtained by precipitation from a solution of one of its salts by potash. The salts of the protoxide and their solutions are of a delicate, very characteristic green color; but

NICKER—NICKOBAR.

in the anhydrous state most of them are yellow. The neutral salts, soluble in water, slightly redden litmus, have a sweetish astringent metallic taste, and, when administered in moderate doses, excite vomiting. The most important of the salts is the sulphate, $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$, which crystallizes in beautiful green rhombic prisms. It is obtained by dissolving the metal or its oxide in dilute sulphuric acid; and is the source from which the other salts of N., the carbonate, oxalate, etc., are obtained. The principal use of N. has been in the composition of various alloys, such as German Silver (q.v.), and in electroplating on an immense scale. In 1880 a process was perfected by Fleitmann for producing large pieces of nickel in malleable form, previously impossible. N. has been used for coins of small value: 1857 a U. S. cent was coined—88 per cent. copper, 12 nickel. The recent application of N. for plating other metals has brought it into great demand, the process which has made it profitable was devised by Isaac Adams of Boston, and involves the use of a double chloride of N. and ammonium, or of sulphate of N. and ammonium: see GALVANISM (*Electrolysis, Electro-metallurgy*)

NICKER, *v.* *nĭk'ér*: in *Scot.* in a game of marbles, to propel a small bowl or marble along the ground, by means of the joint action of the forefinger and thumb, toward other marbles placed at a little distance, with the view of striking one or more of them: N. in *Eng. slang*, one who nicks or hits a mark exactly.

NICK-NACK, *n.* *nĭk-năk*: a spelling of KNICK-KNACK, which see under KNACK.

NICKNAME, *n.* *nĭk'nām* [*Icel. auknefni*; *Sw. öknamn*; *Ger. eichname*, a surname, a nickname—from *Icel. auk*; *OE. eke*, in addition, besides, and *Eng. name*; *F. nom de nique*, a name of contempt]: a term of reproach, contempt, or derision; a by-name: *V.* to call by an opprobrious name. NICK'NAMING, *imp.* NICKNAMED, *pp.* *nĭk'nāmd*, named in derision or reproach.

NICOBAR, *nĭk-ō-bār'*, ISLANDS: group of 20 islands (8 large, 12 small) in the Indian Ocean, n.w. of Sumatra; forming, with the Andamans (q.v.), an extension of the great island chain of which Java and Sumatra are principal links; lat. $6^{\circ} 40'$ — $9^{\circ} 20'$ n., long. 93° — 94° e. They are divided by the Sombrero Channel into two groups, of which the principal members are the Great N. (about 260 sq. m.) and the Little N. (86 sq. m.). The largest island, Great Nicobar, is about 30 m. long, 12 to 15 m. wide. The inhabitants, not numerous, are distinct from Malays and Burmese, and are a savage race, said to resemble the hill-tribes in Formosa. The Danes made a settlement here 1754, were dispossessed by Great Britain 1807–14, and finally withdrew 1848. In 1869 the Indian govt. took possession of these islands, after inquiry into charges of piracy and murder against their inhabitants, and affiliated the new settlement at Nancowry Harbor to the great penal colony at Port Blair in the Andaman Islands. The soil is fertile.

NICOLAI—NICOLAITANS.

NICOLAI, né ko-lā, CHRISTOPH FRIEDRICH: German author, bookseller, and publisher: 1733, Mar. 18—1811, Jan. 8; b. Berlin, where his father also was a bookseller. He applied himself to literary and philosophical studies, and early won repute by *Briefe über den jetzigen Zustand der schönen Wissenschaften* (Berl. 1756), in which he exposed the errors of both Gottsched and Bodmer, then in a controversy agitating the literary world of Germany. N. became associate of Lessing and Moses Mendelssohn. Jointly with the latter, he edited the admirable *Bibliothek der schönen Wissenschaften* (Leip. 1757-8); and, with Lessing, he gave to the world *Briefe, die neueste deutsche Literatur betreffend* (24 vols. Berl. 1759-65). By this he was led to conceive the plan of the *Allgemeine deutsche Bibliothek* (106 vols. 1765-92), a periodical which he edited many years, and which contributed much, particularly in the early period of its existence, to the improvement of literary taste in Germany, though too frequently characterized by an undue acerbity of tone. N.'s hostility to the new schools of literature and philosophy which sprang up in Germany exposed him to attacks from the pens of Herder, Goethe, Schiller, Lavater, and Fichte. —Among N.'s works, *Characteristische Anekdoten von Friedrich II.* (Berl. 1788-92) is of permanent value: his novels are forgotten: his *Autobiography* was pub. 1806.

NICOLAI, OTTO: German musical composer: 1809-48; b. Königsberg. His early life was a struggle with poverty and difficulties. He studied three years in Berlin, and three years (1835-38) in Rome. After travelling ten or twelve years over Europe, he became, 1847, Kapellmeister at Berlin, but soon resigned. His first dramatic work of importance was *Il Templario*, founded on Scott's romance *Ivanhoe*; which, produced at Turin 1841, attained high and permanent reputation. In 1848 he wrote, at Berlin, *Die Lustigen Weiber von Windsor*, on which his renown as a musician is founded—a work charming for its clear design and lively, vigorous tone. whose overture is almost worthy of Weber. Two months after its production, its composer died at Berlin.

NICOLAITANS, nīk'ō-lā'i-lānz: heretical party in the primitive churches; referred to in Rev. ii. 6, 15, the church of Ephesus being commended as hating the deeds of the N., and the church of Pergamos warned as harboring those that hold the doctrine of the N. Nothing further is known on the subject. The name is doubtless from some leader, Nikolaos; but there is no reason to identify him with the Nicolas of Acts vi. 5. The Greek word is thought to resemble in meaning the Hebrew Balaam; and therefore the doctrine of the N. and 'the doctrine of Balaam,' spoken of together, though distinguished, are supposed to be different shades of the same corruption in doctrine and practice. The Balaamites are fully characterized Rev. ii. 14, 11 Pet., and by Jude. In general, the corruption that found place here and there was a perversion of Christian liberty to evil license;

NICOLAS.

In particular, a freedom was claimed not only to eat meats offered to idols, when sold with other meats in the markets (which was permitted by apostolic authority), but also to partake of idol feasts; and idol feasts, it is well known, were customarily followed by the vilest orgies—hence the danger and the corruption referred to in the apostolic warnings.

NICOLAS, *nīk'o-las*, SAINT: one of the early bishops of Myra in Lycia; highly popular saint of the Rom. Cath. Chh.; and revered with still greater devotion by the Russian Chh., which regards him as a special patron. The precise date of his episcopate is a subject of controversy. According to the popular account, he was a confessor of the faith in the last persecution under Maximian, and, having survived until the Council of Nice, was one of the bishops who sat in that great assembly. This seems highly improbable. His name does not occur among the signatures to the decrees, nor is he mentioned with the other distinguished confessors of the faith present at the council, either by the historians, or, what is more important, by St. Athanasius. He may, with more probability, be referred to a later period; but he certainly lived prior to the reign of Justinian, in whose time several of the churches of Constantinople were dedicated to St. Nicolas. Of his personal history, hardly anything is known; and the great popularity of the devotion to him rests mainly on the traditions, both in the West and in the East, of the many miracles wrought through his intercession. He is regarded in Rom. Cath. countries as the especial patron of the young, particularly scholars. In England, his feast was celebrated in ancient times with great solemnity in the public schools, Eton, Sarum Cathedral, and elsewhere; and a curious practice, founded on this characteristic of St. N., still subsists in some countries, especially in Germany. On the vigil of his feast, which is on Dec. 6, a person in the appearance and costume of a bishop assembles the children of a family or of a school, and distributes among them, to the good children, gilt nuts, sweetmeats, and other little presents, as the reward of good conduct; to the naughty ones, the redoubtable punishment of the 'Klaubauf.' In some countries, St. N. is regarded as the patron saint of parish clerks, sailors, and thieves. The supposed relics of St. N. were conveyed from the East to Bari, in the kingdom of Naples, toward the close of the 11th c.; and it is a curious fact that in the Russian Church the anniversary of this translation, May 9, is still observed as a festival. SANTA CLAUS is a form of the same name—the well-known New York Dutch Christmas saint, the Amer. Kriss Kringle of Holland, dear to children, and remembered in annual festival by the St. N. Soc. of New York. This identification is accounted for by the nearness of St. N.'s day (Dec. 6) to Christmas week

NICOLLET—NICOPOLIS.

NICOLLET, *nĭk-ol-lā'*, **JEAN NICOLAS**: 1786, July 24—1843, Sep. 11; b. Savoy, France. He studied at a college in Cluses, Savoy; became asst. prof. of mathematics at Chambéry; went to Paris, where, 1817, he had charge of the library of the Paris Observatory; studied astronomy with Laplace, and assisted in the preparation of some of his works. He visited this country 1832, and made a scientific exploration of the Mississippi valley, and the sources of the Arkansas, Missouri, and Red rivers, and the head-waters of the Mississippi. He also studied the dialects and habits of various Indian tribes. With Lieut. Fremont, he was sent by the govt. to explore the far west, and report on its natural features and resources. His publications were confined to scientific subjects. He died at Washington.

NICOLLS, *nĭk'olz*, **SIR RICHARD**: gov. of New York 1624—72, May 28; b. England. When 18 years of age he entered the army, fled to Holland on the defeat of the royalists, served in the continental wars, and was appointed by Charles II. chief of the 4 commissioners to harmonize the various factions in the New England colonies and obtain control of New Netherlands. He sailed from England 1664, May; and Sep. 8 secured the desired territory from the Dutch, changing its name to New York. N. was a wise governor, and won the regard of the people. He returned to England 1668, was in the war with Holland and lost his life in a naval battle.

NICOMEDEIA, or **NICOMEDIA**, *nĭk-ō-mē-dī'a*: capital of anc. Bithynia, at the n.e. angle of the Gulf of Astacus, in the Propontis, now called the Bay of Ismid. It was built about A.D. 264 by Nicomedes I., who made it the cap. of his kingdom; and it soon became one of the most magnificent and flourishing cities in the world, and some of the later Roman emperors, such as Diocletian and Constantine the Great, selected it for their temporary residence. It suffered greatly both from earthquakes and the attacks of the Goths. Constantine died at a royal villa in the immediate vicinity. Hannibal committed suicide in a castle close by. It was the birth-place of the historian Arrian. The small town of Ismid or Isnikmid now occupies its site, and contains many relics of the anc. metropolis.

NICOPOLIS, *nē-kōp'ō-līs*: recently a Turkish fortress, but since 1878 a city of the newly constituted principality of Bulgaria; on the Danube, about 56 m. w. of Rustchuk. The fortifications, though extensive, were never of much importance, and the Berlin congress of 1878 provided for their demolition. N. is widely built, most of the houses being surrounded by gardens. It is an important market for Wallachian wares, but otherwise has little trade. Wine is produced in the vicinity. Pop. 16,000.

N., the ancient *Nicopolis ad Istrum*, was founded by Trajan in memory of his victory over the Dacians, and fragments of the old wall remain. Here the Hungarians,

NICOPOLIS—NICOTINE.

under their king Sigisimund, were defeated by the sultan Bajazet I., 1396. The city gives title to a Greek abp. and to a Rom. Cath. bishop.

NICOPOLIS, or **ACTIA NICOPOLIS**: city in Epirus, founded by Octavian (Augustus) in commemoration of his victory over Antony and Cleopatra at Actium. It was settled by colonists from the neighboring countries (Ambracia, Calydon, Argos Amphilochicum, etc.), and was considered the capital of s. Epirus and Acarnania. During the middle ages, the city, wasted by barbarian invasions, was supplanted by the town of Prevesa. The ruins of N., now known as Paleoprevesa (Old Prevesa), comprise the remains of the acropolis, of 2 theatres, and of an aqueduct.—N. was the name also of a city in Capadocia, founded by Pompey; and of one in Egypt, founded by Octavian, to commemorate his final victory over Antony.

NICOSIA, *nē-kō-sē'a*: city of Sicily, province of Catania, 70 m. s.w. from Messina; on the crest of a steep, conical hill between two head-branches of the Salso. It has scarcely any manufactures, but has some trade in corn, wine, oil, and cattle. Near it are beds of alum schist, a rich mine of rock-salt, and springs of petroleum. Pop. 15,250.

NICOSIA: capital of Cyprus: see **LEFKOSIA**.

NICOTIAN, a. *nī-kō'shī-ān* [from *Nicot*, a Frenchman who first sent the seeds of tobacco (obtained from a Flemish trader in Florida) into France, 1560]: pert. to or denoting tobacco. **NICOTIANIN**, n. *nī-kō'shī-ā-nīn*, the volatile oil of tobacco, possessing the smell of tobacco-smoke. **NICOTINE**, or **NICOTIN**, n. *nīk'ō-tīn*, a highly acrid, pungent, and poisonous principle, extracted from tobacco (see below). **NICOTIANA**, n. *nī-kō-shī-ā'nā*, a genus of plants, which includes the tobacco-plant, ord. *Solanaceæ*: see **TOBACCO**.

NICOTINE, or **NICOTIN**, *nīk'ō-tīn*, or **NICOTINA**, *nīk'ō-tī'na*, or **NICOTYLIA**, *nī-kō-tī'lī-a* ($C_{10}H_{14}N_2$): one of the natural volatile oily bases destitute of oxygen; constituting the active principle of the tobacco plant, in the leaves, roots, and seeds of which it occurs in combination with malic and citric acids. It is contained likewise in the smoke of the burning leaves. It is a colorless, intensely poisonous liquid, of specific gravity 1.048, which boils at 480° F. with partial decomposition, without decomposition in a stream of hydrogen at 302°—392° F.; evolves a very irritating odor of tobacco, especially on application of heat, is very inflammable, and burns with smoky flame. It is moderately soluble in water, and dissolves readily in alcohol and ether. If exposed to the air, it absorbs oxygen, and becomes brown, and ultimately solid. The quantity of N. contained in tobacco varies from 2 to 8 per cent.; the coarser kinds containing the larger quantity, while the best Havana cigars seldom contain more than 2 per cent., and often less.

A remarkable case of poisoning by N.—that of the

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Count Bocarmè, who was tried and executed in Belgium for the murder of his brother-in-law—is recorded in the *Annales d'Hygiène* 1851, and was the occasion of Orfila's publishing his *Mémoire sur la Nicotine*. A distinguished student of the College of Chemistry subsequently employed it for suicide. The deaths from the use of tobacco in the form of injection—of which several cases are on record—were doubtless due to the action of this substance.

NICOYA, *nē-kō'yâ*, GULF OF: arm of the Pacific, indenting the n.w. coast of Costa Rica, between the mainland and the peninsula of Nicoya, whose s. extremity is Cape Blanco. The gulf extends n. and s. about 55 m.; is about 30 m. wide at its mouth, between Cape Blanco on the w. and Cape Herradura on the e.; contains several small islands, the principal being Venado, Bejuca, San Lucar, Castillo, and Chira. The largest rivers emptying into it are the Rio Grande, Nicoya, and Tempisque. Punta Arenas, the only port of entry on the Pacific side of Costa Rica, is on the e. side of the gulf.

NICTATE, v. *nīk'lā'*, or NICTITATE, v. *nīk'ŭ-lāt* [L. *nictātus*, winked—from *nictārē*, to make a sign with the eyes]: to wink. NIC'TATING, imp., or NIC'TITATING, imp.: ADJ. winking. NIC'TATED, pp., or NIC'TITATED, pp. NICTATION, n. *nīk-tā'shŭn*, or NICTITATION, n. *nīk'ŭ-lā'shŭn*, the act of winking. NICTITATING MEMBRANE, a fold of skin with which birds cover their eyes.

NIDIFICATE, v. *nīd'ŭ-fī-kāt* [L. *nidificatus*, built a nest—from *nidus*, a nest; *faciō*, I make]: to build nests. NID'IFICATING, imp. NID'IFICATED, pp. NID'IFICA'TION, n. *-kā'shŭn*, the act or process of building a nest and hatching and rearing the young.

NIDULANT, a. *nīd'ŭ-lānt* [L. *nidulans* or *nidulan'tem*, making a nest—from *nidus*, a nest]: nestling, as a bird in its nest; in *bot.*, imbedded in pulp, as in a nest; partially incased in some covering. NID'ULA'TION, n. *-lā'shŭn*, time of remaining in the nest.

NIDULITES, n. plu. *nīd'ŭ-līts* [L. *nidus*, a nest; Gr. *lithos*, stone]: certain organisms occurring in Silurian strata—so called because supposed to be egg-masses.

NIDUS, n. *nīdŭs* [L. *nidus*, a nest]: a term for any place where parasites, worms, or insects lodge and lay their eggs; a neet or hatching-place; a hatching-place for infectious diseases.

NIEBUHR, *nē'bôr*, BARTHOLD GEORG: one of the most acute historians, critics, and philologists of modern times: 1776, Aug. 27—1831, Jan. 2; b. Copenhagen, where his father, Karsten N. (q.v.), then resided. N.'s early aptitude for learning led him to be regarded as a juvenile prodigy; and, unlike many other precocious children, his powers of acquiring knowledge kept pace with his advancing years. After careful preliminary education, under the superintendence of his father, he spent a session at Göttingen studying law, and thence went, in his

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19th year, to Edinburgh, where he gave special attention to the natural sciences. On his return to Denmark, he became private sec. to the finance-minister, Schimmelmann, and till 1804 held appointments under the Danish government, which, however, he resigned in consequence of his strong political tendencies, including the profound German detestation of Napoleon. N. even sought admission into the regular army of Prussia, but without effect; however, he entered the Prussian civil service 1806, and during the three succeeding years he shared in the vicissitudes which befell the govt. of his chief, Count Hardenberg, after the disastrous battle of Jena, and the consequent pressure of the Napoleonic influence on the management of the state. He was commissioner on the national debt, and for a short time Prussian minister to Holland. His excessive sensitiveness unfitted him for practical politics; and the opening of the Univ. of Berlin, 1810, was a new era in the life of N., who—having accepted a position there as prof.—gave a course of lectures on Roman history, which, by making known the results of the new and critical theory which he had applied to the elucidation of obscure historical evidence, established his position as one of the most original and philosophical of modern historians. His appointment, 1816, to the post of Prussian ambassador at the papal court, where he remained till 1823, gave him an opportunity of testing on the spot the accuracy of his conjectures on many questions of local and social bearing. On his return from Rome, N. took up his residence at Bonn, where, by his admirable lectures and expositions, he greatly developed classical and archæological learning. He was thus employed when the revolution of 1830 roused him from his calm literary pursuits. N.'s sensitive nature, unstrung by physical debility, led him to an exaggerated view of the consequences of this movement, and to anticipate a recurrence of all the horrors of the former French Revolution; and the result was mental depression and bodily prostration, which ended in his death early in the following year. N.'s attainments embraced a more extensive range than most men are capable of grasping, for he was distinguished alike as a shrewd man of business, an able diplomatist, an accurate scholar, and a man of original genius. He had mastered 20 languages before the age of 30 years, while the mass of facts which his tenacious memory retained, and the intuitive sagacity that enabled him to sift true from false historic evidence, and often to supply by felicitous conjecture the link wanting in some imperfect chain of evidence, show the extraordinary scope of his intellect. It is not to be denied, however, that he is sometimes arbitrary and un-historical in his conjectures; and a few of the stricter sort of skeptical critics, like the late Sir George Cornewall Lewis, even go so far as to regard his effort to construct a continuous Roman history, out of such legendary materials as we possess, as, on the whole, a failure. But almost universally it is conceded that N. was the first

writer to deal with the ancient history of Rome in a scientific spirit. His work made an epoch; though the nature of the work which he essayed to do was not so much history as historical criticism. He is not an artistic narrator and descriptive painter of men; but, as has been said of him, 'N.'s treatment of *institutions* was an actual contact.' He had a luminous intellect, strong affections, a magnanimous nature, quick sympathy with all that is noble and pure, an honest and simple heart. His oversensitiveness sometimes interfered with the free action of his judgment. Among the many important works with which he enriched the literature of his time, the following are some of the most noteworthy: *Römische Geschichte* (3 Bde. Berl. 1811-32; 2d ed. 1827-42; 33; 53)—the first two vols. have been translated by J. C. Hare and C. Thirlwall, and the third by Dr. W. Smith and Dr. L. Schmitz; *Grundzüge für die Verfassung Nederlands* (Berl. 1832); *Griech. Heroengeschichte* (Hamb. 1842), written for his son Marcus; the *Kleine historische und philologische Schriften* (2 Bde. Bonn 1828-43) contain his introductory lectures on Roman history, and many of the essays which had appeared in Transactions of the Berlin Academy. Besides these, and numerous other essays on philological, historical, and archæological questions, N. co-operated with Bekker and other learned annotators in re-editing *Scriptores historiæ Byzantinæ*; he also discovered hitherto unprinted fragments of classical authors—e.g., of Cicero's *Orations* and portions of Gaius, —published the *Inscriptiones Nubienses* (Rome 1821), and was a constant contributor to the literary journals of Germany. See Miss Winkworth's *Life and Letters of N.* (3 vols. 1852); Classen's *N.* (1876).

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NIEBUHR, KARSTEN: distinguished geographer and traveller. 1733, March 17—1815, Apr. 26; b. Lüdingworth, Lauenburg, in the Hanoverian territory of Hadeln, on the confines of Holstein: son of a small farmer, and father of Barthold Georg N., historian of Rome. Early thrown on his own resources, he spent several years of his youth as a day-laborer; but his natural taste having led him to study geometry, and having acquired a little money, he went to Göttingen, where he attended the classes at the univ until his resources were exhausted. At this period he entered the Danish service, and 1761 he joined the scientific expedition which King Frederick V. sent to explore certain portions of Arabia, with a view of illustrating some passages of the Old Testament. The expedition reached Cairo at the close of 1761, and after having carefully explored the pyramids, and crossed the desert to Mount Sinai and Suez, proceeded to Arabia Felix. Here, however, the various members of the expedition, which included the eminent naturalist Forskäl, began to fall victims to the diseases of the climate; and at length all perished except N., who had suffered severely from fever, but had adopted the diet and dress of the natives—thus probably saving his life. He prosecuted his travels with extraordinary resolution for more than six years, going as far as India, visiting also Persia and Asiatic Turkey. On his return to Denmark, 1767, N. published the results of his important mission, which appeared in German under the following titles, *Beschreibung von Arabien* (Copenh. 1772), and *Reisebeschreibung von Arabien und andern umliegenden Ländern* (Copenh. 1774–78, 2 vols.); the publication of vol. III. of this work was unfortunately delayed by numerous other engagements; and more than 20 years after his death the book made its appearance under the supervision of N.'s daughter and through the liberality of the eminent bookseller Perthes of Hamburg. In addition N. edited and published at his own cost the natural-history notes of his deceased friend and fellow-traveller, P. Forskäl, which he arranged in two works, *Descriptiones Animalium*, &c. (Copenh. 1775), and *Flora Aegyptiaco-Arabica* (Copenh. 1776). The accuracy of detail, fidelity of delineation, and careful avoidance of all exaggeration, which characterize N.'s geographical and social descriptions of Arabia and other Asiatic countries, have made his works classical textbooks for all who wish to study the subject. Although N. accepted, 1778, a civil post, which fixed his residence in the remote provincial town of Meldorf, in the Ditmarsh district of Holstein, where he applied himself during the rest of his life to his official duties, he never relinquished his interest in scientific inquiry, and contributed several valuable papers on the geographical and political history of the nations of the east to the *Deutsche Museum*, and other periodicals. He was not brilliant nor widely accomplished; indeed to the last, he remained somewhat of a peasant; but he had scholarly instincts and high moral purpose; and ranks as one of the most truthful and scientifically exact travellers of modern times.

NIECE—NIEMEN.

NIECE, n. *nēs* [F. *niece*, a niece—from mid. L. *neptiā*—from L. *neptis*, a granddaughter: L. *nepos*, a grandson, a nephew]: the daughter of a brother or sister.

NIELLO, n. *nī-ël lō* [It. *niello*, curved or wavy work in gold or silver: F. *nielle*, dark enamel-work]: species of ornamental engraving resembling damask-work; a specimen of the early fathers of copperplate printing.—*Niello-work* is a method of ornamenting metal plates by engraving the surface, and rubbing in a black or colored composition, so as to fill up the incised lines, and give effect to the intaglio picture. It is not known when this art originated; Byzantine works of the 12th c. still exist to attest its early employment. The finest works of this kind belong to the first half of the 15th c., when remarkable excellence in drawing and grouping minute figures in these metal pictures was attained by Maso di Finiguerra, eminent painter, and student of Ghiberti and Massacio. In his hands it gave rise to copperplate engraving (see ENGRAVING): hence much interest attaches to the art of niello-cutting. Genuine specimens of this art are rare; some of those by Finiguerra are very beautiful and effective, the black pigment in the lines giving a pleasing effect to the surface of the metal, which is usually silver. Those of his works best known are some elaborately beautiful pattines wrought by him for the church of San Giovanni at Florence, one of which is in the Uffizia, and some are in various private collections. In the collection of Ornamental Art at South Kensington, there are no less than 17 specimens of this art.

NIEMEN, *nē'mén* (called by the Germans *Memel*, *mā'mél*): river in Prussia, rising a few m. s. of the city of Minsk, flows w. to Grodno 180 m., n. and w. along the frontiers of the Polish province of Augustowo, and w. through E. Prussia to the Kurische Haß; entire length, 640 m. It is navigable for large craft at Grodno, 400 m. from its mouth; and is free of ice from March to Nov. Between Grodno and Kovno are 55 rapids and shallows, and pilots are therefore required for navigation. At Winge, 8 m. below Tilsit, the N. divides into two branches, of which the n., the Russ, reaches the Kurische Haß by nine mouths; and the s., the Gilge, by seven mouths. The delta is traversed by numerous canals. The N. is of considerable commercial importance. Large barges bring down the produce of Lithuania and of a portion of Poland to Königsberg and Memel. Corn, hemp, flax, hides, and bacon are the principal articles brought from the interior. Its principal affluent is the Vilna on the right.

NIEPCE DE ST. VICTOR--NIEUWKERK.

NIEPCE DE ST. VICTOR, *nē-ěps' deh sāng vik-tar*, CLAUDE-FELIX-ABEL: French chemist and photographer: 1805, July 26—1870, April; b. Saint Cyr, near Chalon-sur-Saone; nephew of Joseph Nicéphore N., one of the inventors of photography (see DAGUERRE: PHOTOGRAPHY). He served in the army; but having made an important chemical discovery in connection with dyeing, he was permitted to exchange into the municipal guard of Paris, for greater facility of scientific studies. This was in 1845, at which time his attention was specially drawn to the important discoveries in photography by his uncle Nicéphore N. He was led, 1847, to the discovery of methods for obtaining images on glass, coated with albumen, starch, or gelatin, and for reproducing designs by the use of vapor of iodine; and his effort was given especially to obtaining photographie images in colors; and before the close of 1852, he had succeeded in obtaining faithfully colored images of flowers natural and artificial, colored engravings, gold and silver lace, etc., upon silvered plates which had been sensitized by a chloride of copper. In obtaining these pictures, both photographic printing and the camera were employed; but to his intense disappointment, he found that the colors soon faded, and after a time disappeared. This process he named 'Heliochrome.' His third and most important invention, the art of 'Heliography,' or production of engraved steel-plates by photography, was first communicated to the Acad. of Sciences 1853, May. The credit of originating the idea is not his; for his uncle, previous to 1839, had communicated an imperfect sketch of a similar invention to M. Arago; and Mr. Talbot and others had succeeded by a similar process in obtaining images of simple objects on steel-plates; but to N. belongs the credit of having removed the almost insurmountable manipulative difficulties, and rendered the process of much more general application, thus making it practically serviceable.

In 1855, he published his various memoirs under the title *Recherches Photographiques*, followed 1856 by *Traité Pratique de Gravure sur Acier et sur Verre*. N.'s scientific studies did not interfere with his military promotion.

NIERSTEIN, *nēr'stīn*: market village (pop. 3,000) of Hessen-Darmstadt, province of Rhein-Hessen, 9 m. s.e. of Mayence. It gives name to a well known and highly-prized variety of Rhenish wine, produced in the neighborhood.

NIEUWER AMSTEL, *nyū'vēr ām'stēl*: town of the Netherlands, province of N. Holland, five m. s. by w. from Amsterdam. A few m. e. of it is the village of Ouder Amstel (pop. about 3,000) on the Amstel, one of the smaller mouths of the Rhine, which passes through the city of Amsterdam, and falls into the Zuider Zee. Pop. of N. A. 8,066.

NIEUWKERK: see NYKERK.

NIEUWVELDT MOUNTAINS.—NIGELLA.

NIEUWVELDT MOUNTAINS, *nyüv'vëlt*: portion of the most northerly of the three ranges of mountains in Cape Colony, which all at various distances from the s. coast run parallel to it. Of these three ranges, the most n. attains the greatest average height, 7,000 feet. The mountains known as the N. M. extend in lat. $31^{\circ} 40'$ to $32^{\circ} 30'$ s., and are intersected by the meridian of 22° e. long. From their s. slopes, the Gamka or Lion river draws its head waters; and from their n. the Gariep or Orange river obtains an important tributary in the Upper Zak.

NIEVRE, *nē āvr'*: central dept. of France, occupying a portion of the watershed between the Loire and the Seine; bounded w. by the rivers Allier and Loire; 2,620 sq. m. Mountains occupy the e. border, and extend in a line of heights from s.e. to n.w., dividing the dept. into two great declivities. The soil is generally rocky and sandy, cut up by ramifications, almost always wooded, of the mountains of Morvan. There are several plateaux more or less fertile, a number of hills covered with vines, and valleys productive in pastures; but the principal wealth consists in forests and minerals. The Nièvre, whence the name of the dept., is an inconsiderable affluent of the Loire from the right. The three chief rivers—the Allier, Loire, and Yonne—are navigable, and the Yonne which belongs to the system of the Seine, is connected with the Loire by a canal across the watershed. Of the entire area, more than 792,000 acres are cultivable land, and more than a third of the whole surface is covered with forests, the timber from which, forming one of the principal sources of wealth, is conveyed by water in great quantities to Paris, etc. About 6,000,000 gallons of wine are made yearly. From the mines of N. iron of good quality is obtained in abundance; lead, copper, and silver also are found; and there are coal mines, and quarries of marble and granite. Arrondissements, Nevers, Château Chinon, Clamecy, and Cosne; capital, Nevers. Pop. (1891) 343,581; (1901) 323,783.

NIFLHEIM, *nīflhām* [from the same roots as Lat. *nebula*, cloud, and Eng. *home*, meaning the abode of clouds]: in the old Scandinavian mythology, one of the nine separate abodes or homes, of which the Scandinavians conceived the world as consisting in the beginning of time. It is the kingdom of cold and darkness, and is separated from Muspelsheim, the kingdom of light and heat, by a huge chasm (Ginnungagap [q.v.] yawning gap). Here flows the spring Hvergelmir, watched by the dragon Nidhugger; this spring sends out 12 ice-rivers, from the drops of which, thawed by sparks from Muspelsheim, sprang the chaotic giant Ymir and the cow Audhumbla. N. was also the abode of Hel (q.v.), the goddess of death, who here received all who died of sickness or old age.

NIGELLA, *nī-jěll'a*: genus of plants of natural order *Ranunculaceæ*. having five colored spreading sepals; five or ten small two-lipped petals, with tubular claw; the carpels more or less connected together, many-seeded; leaves divided into threadlike segments, flowers solitary at the top

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of stem or branches. They are annuals, natives chiefly of the countries near the Mediterranean and warmer temperate parts of Asia. Some, occasionally seen in gardens in Britain, are vulgarly known by the names *Devil-in-a-bush*



Nigella sativa :

a. top of stem, with leaves and flowers : b. fruit.

and *Devil-in-a-mist*. The seeds are aromatic, and somewhat peppery. Those of *N. sativa*, species common in cornfields in s. Europe, are supposed to be the **BLACK CUMMIN** of the ancients, perhaps the **CUMMIN** of the Bible. The seeds of a specie of *N.* are much used by the Afghans for flavoring curries.

NIGER, *nījér*: the great river of w. Africa. Its name, according to Dr. Barth, is a contracted form of one of the native names. *N-eghírrēu*, which, as well as all the other names *Dhiúlibá* (*Joliba*), *Máyo*, *I'sa*, *Kwára* (*Quorra*), and *Báki-n-rúwa*, means simply 'the river'. The principal head-water rises on the slopes of Mt. Loma, peak of the Kong Mountains, in a barren, desolate, and treeless region, lat. $9^{\circ} 25' \text{ n.}$, long. $9^{\circ} 45' \text{ w.}$, about 1,600 ft. above sea-level. It flows n.e. to Timbúktu, where it bends e. for about 250 m., then curves toward the s., and proceeds in a general s.s.e. course, until arriving at the head of its delta. lat. about $5^{\circ} 30' \text{ n.}$, it separates into a multitude of branches, and enters the Gulf of Guinea, between the Bights of Benin and Biafra. It is called the Timbri for the first 70 m. of its course, after which it receives the name of the Joliba, or more correctly Dhiúlibá (Mandingo word for Great river), and after passing Timbúktu, it is known principally as the Quorra or Kworra. Little is known of its course until it reaches Sego (lat. $12^{\circ} 30' \text{ n.}$), 350 m. from its source: but from that point it has been explored through nearly the whole of its length. From Sego to Timbúktu it flows through a fertile country, producing rice, maize, and vegetables and bounding in good pasturage. In lat. $14^{\circ} 10' \text{ n.}$, the river separates into two branches; the w. is called the Joliba or Mayo, the e. the Bara-Isa. These, as they pro-

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ceed, are known as the White and Black rivers respectively; and they unite after inclosing the island of Jimballa, 220 m. in length, and 2 to 20 m. in breadth. The river again bifurcates before arriving at Timbúktu, and after passing that town the two branches, on one of which—the northern—the Cabra, the port of Timbúktu is situated, again unite. In the district of union, s.w. of Timbúktu, the country far and wide is intersected by numberless streams, forming a complicated net-work of water-courses. The river then flows e., sending off many creeks and branches to Bamba; its banks here are low and marshy, and during the rainy season are overflowed. In this region, rice, tobacco, wheat, and even barley are grown. The river then passes the town of Burrum, where it curves s.e., and from this point—called from the bend, the *Knee of Burrum*—it bears the name Kworra or Quorra until it reaches its delta. Immediately below *Burrum*, the N. does not present an imposing appearance. Its bed resembles a broad marshy valley, inclosed by ridges of rock or high dunes, thickly overgrown with reeds and sedges, and cut up by numberless streams and creeks. At the ferry of Burri (lat. 15° 55' n.) the breadth of the river is 2,400—2,700 ft.; and here the whole valley, about 10 m. broad, is fruitful, carefully cultivated, and well peopled. Further s. the towns of Garu and Sandu are passed, where the bed is rocky and navigation dangerous. At the town of Say, the N., after reaching a breadth of 2,500 to 3,000 paces, is narrowed to 1,000 paces, flows at the rate of 3 m. an hour, and is inclosed by rocky banks. From Say to Gimpri (70 m.) its course remains unknown. From Wara, it flows e.s.e. to Rabba; and from this town to its mouth, the course of the river is comparatively well known. In lat. between 8° and 7° 30' n., it flows round the eastern shoulder of the Kong Mountains (2,000 to 3,000 ft. high), where its banks are extraordinarily beautiful. In lat. 7° 40' n., it receives the Benue from the east. The delta consists of an immense mangrove forest, cut up into islands by the numerous branches (22 in number) of the river. The principal mouths are the Bonny Mari, and Nnn.

The existence of the N. seems to have been made known in ancient times first by travellers from the s. shores of the Mediterranean, who, crossing the great desert, came upon the upper course of a great river flowing toward the rising sun. This river Herodotus supposed to be a branch of the Egyptian Nile. Pliny speaks of the *Nigris* of Ethiopia, but he also thought that it flowed into the Nile. Even until the present century it was supposed to be a part of the Nile. No definite notion of the river had been formed until it was visited by Mungo Park July, 1796 this traveller explored its banks 160 m. see PARK, MUNGO. Caillié explored the river from the town of Jennee to Timbuktu; and the English expedition of 1832, under Lander and Allen, proved that the Quorra was navigable from Boussa to the sea. The Church Miss'y Soc. (England) has done much to open the lower N. to Europeans, it maintains four

NIGGARD—NIGHT.

stations on the coast, and five from 120 to 420 m. inland. In 1882, the French govt. began laying a railway to connect Kai, at the head of navigation on the Senegal, with the Niger. In 1854, Dr. Barth followed the course of the river from Timbúktu to Say. In 1879, M. Verminck, merchant of Sierra Leone, equipped two of his clerks, MM. Zweifel and Moustier, who explored part of the principal head stream of the N. The entire length of the river is estimated at more than 2,500 miles.

NIGGARD, a. *níggjrd* [Icel. *hnöggrr*, stingy; Norw. *nýggja*, to gnaw, to scrape: Sw. *nýgg*, sparing; Lap. *nayget*, to scrape together]: sordidly unwilling to spend; miserly; meanly covetous; extremely sparing of expense; in *OE.*, sparing; wary: N. one who scrapes up money by little and little; one who is meanly covetous; one who spends grudgingly; a miser: V. in *OE.*, to supply sparingly; to stint. **NIGGARDLY**, a. *-lī*, sordidly parsimonious; avaricious: AD. in a manner meanly covetous. **NIGGARDNESS**, n. *-nēs*, or **NIGGARDLINESS**, n. *-lī-nēs*, state of being niggardly; mean covetousness; extreme care in sparing expense. **NIGGARDISE**, n. *-diz*, in *OE.*, avarice; sordidness. —**SYN.** of 'niggardly, a.': miserly; avaricious; covetous; sordid; parsimonious; sparing; penurious.

NIGGED ASHLAR, n. *nīgd āshlēr* [Sw. *nagga*, to gnaw, to nibble: prov. Eng. *nīg*, to clip money]: stone hewn with a pick or a pointed hammer instead of a chisel.

NIGGER, n. *nīg'ēr* [L. *niger*, black]: a negro; a colored slave; a species of caterpillar—known also as a *black-jack*.

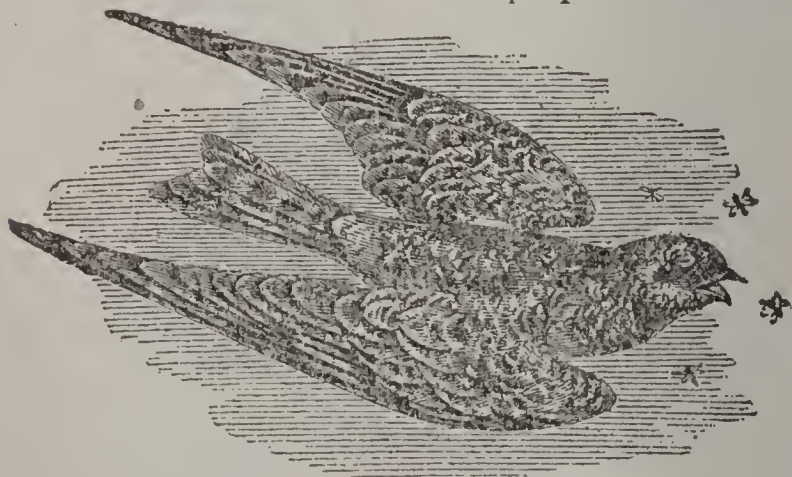
NIGH, a. *nī* [Goth. *nehv*; Ger. *nahe*; AS. *neah*, nigh; Dut. *na*; Icel. *nā*, nigh]: near; not distant or remote in time or place; contiguous; closely allied by blood; close in fellowship: AD. near to a place; almost; near by: PREP. near; almost close to. **NIGHER**, a. compar. *nī'ēr*, more nigh. **NIGHTEST**, a. superl. *nī'ēst*, most nigh. **NIGH**, v. *nī*, in *OE.* to draw near; to approach; to come near to; to touch. **NIGHING**, imp. drawing near. **NIGHED**, pp. *nīd*. Another *OE* spelling is *NYE*, *nī*. **NIGH'NESS**, n. *-nēs*, nearness; proximity. —**SYN.** of 'nigh, a.': near; close; contiguous; adjacent; proximate; present; intimate.

NIGHT, n. *nīt* [Goth. *nahts*; AS. *niht*; Icel. *nátt*; Ger. *nacht*; Lith. *naktis*; L. *nox*, or *noctem*, night]: the part of the day between sunset and sunrise; time of darkness; period from darkness until 12 o'clock; *figuratively*, death; adversity; obscurity; intellectual and moral darkness; frequently used in compounds to denote something that relates to night, as *night-bird*. **NIGHTLESS**, a. *nīt'lēs*, without a night. **NIGHTLY**, a. *nīt'lī*, done every night: AD. by night. **NIGHTWARD**, ad. *nīt'w'rd*, approaching toward night. **NIGHTED**, a. *nīt'ēd*, in *OE.*, black; darkened; clouded. **NIGHT CAP**, a cap for wearing in bed at night; *familiarly*, a tumbler of warm punch or toddy taken immediately before going to bed. **NIGHT-DEW**, the dew formed in the night. **NIGHT DRESS** or **GOWN**, a loose undress or gown for sleep. **NIGHTFALL**, the close of the day; evening. **NIGHT-FLY**, a moth that flies in the night.

NIGHT-HAWK.

NIGHT-GLASS, a sort of telescope, which, by concentrating a large amount of light, enables objects to be distinctly seen at night. NIGHT-HAWK, a well-known Amer. bird; a hawk that hunts its prey by night (see below): in *Scot.*, the night moth. NIGHT-JAR, the bird called Goatsucker (q. v.). NIGHT-LIGHTS, lights with a small flame used in bedrooms. NIGHT-MAN, one who empties cess-pools, etc., at night. NIGHTSHADE, the name given to several poisonous plants; the *Solanum nigrum* (see below). DEADLY NIGHTSHADE, a highly poisonous plant; the *Atropa belladonna* (see BELLADONNA), ord. *Solanaceæ*. NIGHT-SOIL, the contents of cess-pools, etc. NIGHT-VISION, a dream in the night. NIGHT-WALKER, one walking at night in sleep; a somnambulist. NIGHT-WATCH, the watch placed at night, as on a ship at sea. BY NIGHT, during the night. IN THE NIGHT, suddenly; unexpectedly. TO-NIGHT, in this night; the night which follows to-day. *Note.*—NIGHTSHADE, as applied to the plants, is said to have arisen because of its use to blacken the eyes in mourning for the dead.

NIGHT-HAWK (*Chordeiles Virginianus*): bird of the Goatsucker family (*Caprimulgidæ*), very common in America, from the Arctic islands to the W. Indies. It is a bird of passage, visiting the n. in summer. It is about nine inches in length, and 23 inches in expanse of wing. The gape is destitute of bristles. The tail is slightly forked. The general color is brown, but it is much mottled and marked with white; and there is a white mark on the throat, in shape like the letter V. The N. is seen pursuing its insect prey in the air, chiefly a little before sunset, and before dawn, and attracts attention by its rapid repetition of a sharp impatient cry, which has gained for it the name *Piramidig*. It produces also in its flight a remarkable hollow booming sound, 'like blowing into the bung-hole of a barrel,' in the moments of its perpendicular descent



Night-hawk (*Chordeiles Virginianus*).

through the air. Its movements in the air are extremely beautiful and rapid. When fat and plump, as it usually is on its southward migration, it is esteemed for the table, and great numbers are shot.

NIGHT-HERON—NIGHTINGALE.

NIGHT-HERON (*Nycticorax*) genus of *Ardeidae* (see **HERON**), intermediate in form between bitterns and herons, but with shorter and thicker bill than either, and legs shorter than in herons. The N. Amer. species are the N.-H., or **QUA-BIRD**, or **SQUAWK** (*Nycticorax grisea*, var. *nævia*), white before, passing into pale gray, with crown and scapulars glossy greenish black; and the yellow-crowned N.-H. (*N. violaceus*) with a tawny or white crest. The first closely resembles the European N. H. (*N. Gardeni*), which weighs nearly two lbs. Its plumage is soft, the general color ash-gray, passing into black on the neck and head, and into white on the breast and belly. The back of the head is adorned with three very long white feathers, which hang down on the neck. The nests are built in trees, and in general many together, forming a *heronry*. The N.-H. feeds chiefly by twilight or at night; and is never seen



Night-Heron (*Nycticorax Gardeni*).

standing motionless, like herons, but walks about in search of prey, by the sides of ditches, ponds, etc.; its food consisting chiefly of fishes, frogs, etc. Its cry is very loud and hoarse. Other species of N.-H. are found in Africa and Australia.

NIGHTINGALE, n. *nīt'in-gāl* [Ger. *nachtigall*, the bird that sings by night: AS. *niht*, night; *galan*; Icel. *gala*, to sing: comp. L. *gallus*, a cock], (*Philomela*): genus of birds of family *Sylviadæ*, approaching in character to the *Merulidæ*, the young having their first plumage mottled, as in the thrushes, and the legs being longer than in the fauvettes and other *Sylviadæ*, with which they are commonly classed. The bill is straight, slender, not quite as long as the head; the wings do not much pass beyond the base of the tail; the first quill is very short, the third is the longest; the tail is slightly rounded. The COMMON N. (*P. lusciniæ*) is well known as the finest of songsters. It is rather larger than the hedge-sparrow, with about the same proportionate length of wings and tail. It is of rich brown color above, rump and tail reddish, lower parts grayish-white. The sexes are alike. It is a native of

NIGHTINGALE.

many parts of Europe and Asia, and of n. Africa; and is a bird of passage, extending its summer migrations on the continent of Europe as far n. as s. Sweden; but in Britain it has scarcely ever been seen further n. than Yorkshire. It is plentiful in parts of s. and e. England, but is less common in the w. counties, and does not visit Wales or Ireland. It frequents thickets and hedges, and damp meadows near streams. The market-gardens near London are among its favorite haunts. It feeds much on caterpillars and other larvæ. It arrives in England about the middle of Apr., the males 10 or 14 days before the females. It is at this season, and before pairing has taken place, that bird-catchers generally procure nightingales for cage-birds, as they then become easily reconciled to confinement, while, if taken after pairing, they fret and pine till they die. The N. makes its nest generally on the ground, but sometimes on a low fork of a bush. The nest is loosely but ingeniously constructed of dead leaves, rushes, and stalks of grass, with lining of fibrous roots. The eggs are four or



Nightingale (*Philomela lusciniæ*).

five in number, of uniform olive-brown. The song of the male ceases to be heard as soon as incubation is over. In captivity, however, it is often continued longer. The N. usually begins its song in the evening, and sings with brief intervals throughout the night. The variety, loudness, and richness of its notes are equally extraordinary; and its long quivering strains give suggestion of plaintiveness as well as of passionate ecstasy, though there is no reason to suppose that any plaintiveness affects the bird at such times: the mind of the listener interprets the music in accordance with its own mood under the laws of association with the surroundings of the summer night. The N. has been a favorite from most ancient times; and is often mentioned in the poetry of India and Persia, as well as of Greece and Rome. The loves of the N. and the rose are a fanciful theme in which eastern poets delight. The N. much resembles the redbreast in manners, and is equally pugnacious. It has been known to breed with the redbreast in captivity.—There is another and rather larger species of N. in e. Europe, faintly mottled on the breast.

NIGHTINGALE.

NIGHTINGALE, FLORENCE: famed for her labors in reforming the sanitary condition of the British army: b. Florence, Italy, 1823; daughter of William Shore N. of Embly Park, Hampshire, and Leigh Hurst, Derbyshire. Highly educated, and brilliantly accomplished, she early showed intense interest in the alleviation of suffering, which 1844. led her to give attention to the condition of hospitals. She visited and inspected civil and military hospitals all over Europe; studied with the Sisters of Charity in Paris the system of nursing and management in the hospitals; and, 1851, went into training as a nurse in the institution of Prot. Deaconesses at Kaiserswerth, on the Rhine. On her return to England, she put into thorough working order the Sanatorium for Governesses in connection with the London institution. Ten years was the term of apprenticeship thus served in preparation for the work of her life. In the spring of 1854, war was declared with Russia, and a British army of 25,000 men sailed to the East. Alma was fought Sep. 20, and the wounded from the battle, with the sick, were sent down to the hospitals prepared for their reception on the banks of the Bosphorus. These hospitals were soon crowded with sick and wounded, and their unhealthy condition became apparent in a rate of mortality to which the casualties of the fiercest battle were as nothing. In this crisis, Miss N. offered to go out and organize a nursing department at Scutari. The late Lord Herbert, then at the war-office, gladly accepted, and 1854, Oct. 21—within a week from the date of the offer—Miss N. departed with her nurses. She arrived at Constantinople Nov. 4, the eve of Inkermann—the beginning of the terrible winter campaign—in time to receive the wounded from that second battle into wards already filled with 2,300 patients. Her devotion to the sufferers can never be forgotten. She has stood 20 hours at a time, in order to see them provided with accommodation and all the requisites of their condition. In the spring of 1855, while in the Crimea organizing the nursing-departments of the camp-hospitals, she was prostrated with fever, the result of unintermitting toil; yet she refused to leave her post, recovered, and remained at Scutari till Turkey was evacuated by the British 1856 July 28. She, to whom many a soldier owes life and health, had expended her own health in the physical and mental strain to which she had subjected herself; and for years Miss N. has been an invalid, though continuing in her sick room to devise means for improvement of the health of the soldier. In 1857, she furnished the ‘commissioners appointed to inquire into the regulations affecting the sanitary condition of the British army’ with a paper of written evidence, in which she impresses, with the force and clearness which distinguish her mind, the great lesson of the Crimean War, which she characterizes as a sanitary experiment on a colossal scale. The results which in the Crimea accumulated under her own eyes, showing that the rate of mortality among soldiers could be reduced to one-half of what it was in time of peace at home, turned the attention of Miss N. to the general question of army sanitary reform,

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and first to that of army hospitals. In 1858 she contributed to the National Assoc. for Promotion of Social Science, two papers on Hospital Construction and Arrangement, afterward published with her evidence before the commissioners. The *Notes on Hospitals*, from their clearness of arrangement and minuteness of detail, are highly valuable to the architect, the engineer, and the medical officer. In 1858, she published *Notes on Nursing*, a text-book in many a household. At the close of the Crimean War a fund was subscribed to enable Miss N. to form an institution for training nurses: its interest amounts to £1,400 (about \$6,800) per annum; and though no separate institution has been formed, the money is used in training a superior order of nurses in connection with St. Thomas's and King's College Hospitals. In 1863 was issued the Report of the Commission on the Sanitary Condition of the Army in India. The complete Report, with evidence, occupies two folio vols. of nearly 1,000 pp. each. The second of these huge folios is filled with reports from every station in India, occupied by British and native troops. These reports were sent in manuscript to Miss N., and at page 347 of vol. I. are inserted her observations on this immense mass of evidence. In these observations, the facts are brought together in an order, and with an incisive force of statement, which render it one of the most remarkable of public papers ever penned, fitted to open a new era in the government of India; for the views of Miss N. extend to the sanitary reform not only of the British army, but also of the towns of India. In 1871, she published *Notes on Lying-in Institutions, together with a proposal for organizing an Institution for training Midwives and Midwifery Nurses*; in 1873, *Life or Death in India*, and (in *Fraser's Magazine*) 'A "Note" of Interrogation,' which attracted much attention, mainly by her manner of dealing with religious beliefs and life.

NIGHTMARE, *n* *nīt-mār* [AS. *niht*, night; *mara*, a nightmare: Icel. *mara*; Dan. *mare*; Ger. *mahr*, a nightmare: Dut. *nagt merrie*, nightmare: comp. Gael. *nochd-mearan*, a delirium in sleep—from *nochd*, night; *mearan*, delirium], (*Incubus Ephialtes*): painful, and usually frightful sensation in sleep of pressure on the breast, and phantom-seeing: an incubus; a certain overwhelming or stupefying influence. N. in sleep consists in a horrible dream, the terror being inspired by a sense of weight or oppression which the victim refers to the pressure of mountains, giants, hags, serpents, upon the breast; or to some unaccountable weight preventing movement or cry while being pursued by some monstrous enemy or in danger of fatal fall from a height. It is attributed to acceleration or irregularity of the circulation in the chest or in the brain. It has been traced backward to plethora, posture, heavy suppers; and forward as a prognostic of heart disease or hydrothorax. It differs from ordinary dreams in possessing always the same characteristic of fear of some object in contact with the body, in a recognized inability to move or speak while there is a strong desire to do both, and in

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the presence of a semi-consciousness of the real source of the apprehension. The affection is recorded to have been epidemic; and modern instances have occurred where large communities have been agitated by night panics. A regiment of French soldiers, quartered in a ruined monastery, were awakened, at the same hour in two successive nights, by a black dog leaping on the breast of each. These veteran warriors, inured to danger, inaccessible to superstition, could not be prevailed on to make a third trial. Such frightful impressions may occur during the day, and during mere somnolency or drowsiness, but usually at the moment of awakening during the night. The time, the distinct recollection of the circumstance, and the bodily perturbation which remained when consciousness was re-established, all conspired to convert these visions into the objective hobgoblins, the omens and supernatural revelations of past ages and which still linger as matter of belief where the temperament or situation of the individual resemble those of by-gone generations. In a very large number of instances such dreams represent, or are continuations of, the previous waking thoughts and emotions. They are so far voluntary that indigestible food or excess may induce them. Fuseli, for artistic purposes, created 'chimeras dire' in sleep by supping on pork chops.

NIGHT SHADE: English name of certain plants of nat. order *Solanaceæ* (q.v.), possessing the narcotic properties frequently developed in that order. Among them are some



Common or Black Nightshade (*Solanum nigrum*).

species of *Solanum* (q.v.), particularly the **COMMON N.**, or **BLACK N.** (*S. nigrum*), an annual or biennial, with erect angular stem, ovate, sinuate-dentate leaves, drooping lateral

NIGRESCENT—NIHIL HABUIT IN TENEMENTIS.

umbels of white flowers, and globose black berries; a frequent weed in waste places in most parts of the world. Few plants are more widely diffused. It is only slightly narcotic. The leaves, in a fresh state, are said to be injurious to animals which eat them, but seem to lose almost all narcotic property by boiling, and are used as spinach, particularly in warm climates. The berries, though generally dreaded or suspected, may also, it is said, be eaten, at least in moderate quantity, without danger. They contain, however, the alkaloid *Solanine*, found also in the shoots of the potato.—For WOODY N., see BITTER-SWEET. For DEADLY N., see BELLADONNA. For ENCHANTER'S N., see CIRCEA.

NIGRESCENT, a. *nī-grēs'ěnt* [L. *nigrescens* or *nigrescentem*, growing black—from *niger*, black]: growing dark or black; approaching to blackness.

NIHIL, n. *nī'hīl* [L.]: nothing. NIHILISM, n. *nī'hīl-izm*, nothingness: in philosophy, the doctrine that nothing can be known: term applied to certain so-called philosophic systems of 'negative tendency,' which deny God, the soul of man, and the moral distinction of good and evil. It is cognate to the nihilism which characterizes an extreme socialist sect of Russia, whose chief maxim is, that every social institution which now exists must be destroyed to clear the way for a perfectly new state of society, and which advocates the assassination of kings and rulers as one of the means to that end (see below). NIHILITY, n. *nī-hīl-ī-tī*, nothingness: state of being nothing. NIL, n. *nīl*, a contraction of *nihil*, nothing; a term in book-keeping cancelling, passing it over, taking no notice of it.

NIHIL CAPIAT PER BREVE, phrase [Lat. that he take nothing by his writ]: in *law*, the judgment given against the plaintiff in an action, either in bar thereof, or in abatement of the writ.

NIHIL (or NIL) DEBET, phrase [Lat. he owes nothing]: in *law*, a plea denying a debt.

NIHIL (or NIL) DICIT, phrase [Lat. he says nothing]: in *law*, a judgment by *nihil dicit* is when the defendant makes no answer.

NIHIL HABUIT IN TENEMENTIS, phrase [Lat. he had nothing in the tenement or holding]: in *law*, a plea to be made in an action of debt only, brought by a lessor against a lessee for years, or at will without deed.

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NIHILISM, *nī'hīl-izm*, in Sociology: the doctrine of destruction to all existing institutions, as preparatory to some indefinite and spontaneous readjustment of society on the basis of absolute individual freedom. By some recent anarchists it is asserted to be not a doctrine or system, but simply a condition precedent to a true system, which is *anarchy*—this word being used to signify, not chaos, but an order of things that excludes all idea of external government, and depends on individual self-control and voluntary co-operation. But, while the words [*nīl*, nothing; and *a*, without, *archē*, government] might justify the distinction, there has been in fact no essential difference between nihilists and anarchists. The former term—introduced by Turgenieff—has been applied most often to the revolutionists in Russia, and is associated mostly with a peculiar condition and heterogeneous opinions there. The doctrines of Michael Bakunin (1814-72), who is called the Father of Nihilism, are just as definite as those of recent anarchism, are substantially identical with them, and are diligently republished by American and European anarchists. Herten has been spoken of as the founder of doctrinary, Bakunin of militant, and Tchernyshevsky of scientific nihilism. In 1848, Herten said, 'Death to the old world! Life to chaos, destruction! Room for the Future!' and he denounced socialism; but the emancipation of the Russian serfs 1857 made him an opportunist, i.e., one who accepts, in place of immediate destruction, all openings and gradual advances toward the ideal freedom. Tchernyshevsky was a socialist, rather than a nihilist; socialism would make government everything, instead of abolishing it forever, though it might entertain the idea of temporary abolition as a step to its end. The roots of N. in Russia reach back to the Western-European atheism of the 18th c. and the French Revolution. Its rise had some connection with German philosophy, especially Hegelianism, which, though susceptible of extremely different interpretations, undoubtedly tended, in many minds, to unsettle faith as well as to stimulate speculative thought. Bakunin, while rejecting all ideal philosophy, speaks in the style of Hegel, saying that 'every development necessarily implies a negation of its base or point of departure.' Radical writers on political economy, chiefly Proudhon, contributed to the intellectual movement—also the pessimists led by Schopenhauer; but not least the materialists, such as Büchner and Feuerbach. Bakunin begins his discussion of God and the state, by asserting that humanity is nothing but the highest manifestation of animality; that our first ancestors were ferocious beasts, endowed in a higher degree than other animals with the power to think and the desire to rebel—in other words to seek liberty. These two powers create all that constitutes humanity, representing together the negative power in the positive development of human animality. Man became man by an act of disobedience and science. He passed out of animal slavery, and is passing out of a divine slavery; if God is, man is a slave. There is no authority, except that

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of the natural laws within us; there can be no liberty under any external authority and legislation; even in republics a political oligarchy is formed. Science, as representing natural law, is authority, but no *savant* is, nor learned academy; science is an authority of fact, not of right; every authority of right becomes an oppression and a falsehood. The only exception, besides that already made, is the collective and public spirit of a society founded on the mutual respect of all its members. 'Materialism,' says Bakunin, 'denies free will and ends in the establishment of liberty; idealism, in the name of human dignity, proclaims free will, and on the ruins of every liberty founds authority. Materialism rejects the principle of authority, because it rightly considers it the corollary of animality; and because, on the contrary, the triumph of humanity, the object and chief significance of history, can be realized only through liberty.' But he inveighs against the idealization of humanity itself—that is, doubtless, by those who make it their God, their religion, their only immortality; it is real and living only in really living men; we have to consider only existing flesh, bone, and brain. Such is his philosophy. He avowed himself a materialist and an atheist. Although he called himself a revolutionary socialist, he was an individualist *versus* all government, but, for a time, if not to the end of his life, was a collectivist, favoring a central directive power in the production and distribution for the benefit of all; this falls short of the elaborate governmental scheme of socialism proper. Indeed, in 1867, he said he was not a socialist, and that he abhorred communism as the negative of all liberty. In his speech at Geneva, 1868, he proclaimed no right but might, and one's own happiness one's only law. As he was the chief apostle of N., its prevailing doctrines in Russia may be considered as fairly well represented by him. A proclamation put forth five years after his death, demanding simply a representative democracy, with parliaments, and certain reforms, cannot be regarded as nihilistic; if it were such in its source, it may have been an artifice or temporary expedient. A nihilist paper issued 1865 at Heidelberg by Russian students expelled from their own colleges, had for its motto, 'I spit on all comers;' this seems to be explained by the avowal of a nihilist: 'Take the earth and heaven, church and state, take kings and Deity, and spit on them—that's our doctrine.' Students have formed a large quota of Russian revolutionists, a fact due not only to youthful enthusiasm and the reading of radical literature, but also to the materialistic perversions of science and to the maladministration of Russian colleges. Young women, both students and others, have partaken of the movement, and carried it to extreme enthusiasm; in Tchernyshevsky's novel, *What is to be Done?* they found a new model of woman, one who frees herself from the bonds of society, adopts masculine habits, and is independent even to the extent of platonic marriage. Besides students, the revolt includes more or less of the aristocracy, government employees, traders, and soldiers. In many, the materialist

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millennium has become a kind of religion; they give up wealth and position, adopt the garb of laborers, and share the toils and miseries of artisans. Hence some have regarded the extreme enthusiasm as an epidemic hysteria. But the grinding injustice of governmental administration in Russia, the insecurity of even the innocent against informers and omnipresent spies, the farcical trials, the terrible blows of death or exile falling on relatives and friends accused of political offenses—these account for the peculiar bitterness and desperation of Russian anarchism, while the revolutionary movement as such is but a concomitant of the general progress in the civilized world. The Slavonic temperament and oriental element can hardly be considered as factors of much account. The peasantry of Russia have no sympathy with N.; though taxed unmercifully, often, by the eldership of the village commune, elected by themselves—an election so managed that it may be but an empty form; and though frequently living in squalor and receiving but the amount of eight or ten dollars wages a month, they adore Russia and the Czar. They would prefer to be governed and taxed directly by the imperial government, which now governs them only through the corrupt communes. The peasantry is an immovable obstacle in the way of N., besides other insurmountable barriers. It is not wonderful, therefore, that N., since its period of startling activity from a time soon after the emancipation of the serfs in 1857, till about 1885, seems to have degenerated into a sort of *vendetta*—a life for a life; and so lives on as an occasional and futile local outbreak, accompanying a world-wide debate on public questions, especially the really serious and growing problems of capital and labor. Should these problems be everywhere measurably solved by the establishment and greater purity of representative government, by wise legislation, and especially by the prevalence of profit sharing and co-operative labor; should building-loan associations continue to flourish, endowing the poor with homes; and should the strong reaction which has now set in against materialism and its selfish, utilitarian ethics become general—it is safe to say that anarchism as a violent revolt has had its little day. Nowhere, to-day, are the masses in sympathy with it; they care not for its theory of extreme individualism, and reject its intemperate words and methods. Besides, the only kernel of truth in it has been and is becoming realized insensibly more and more—namely, that as men grow more enlightened and elevated, they are a law unto themselves, and even their obedience to lawful authority is free. This was clearly announced by Christianity, which further speaks of a time when Christ shall have put down all rule and authority and power. There are even some, now, who claim to be Christian anarchists, and refer to the writings of the apostle Paul as good anarchism. Correspondingly with the Pauline doctrine and with modern progress, external government will in time be reduced to a minimum, and voluntary association tend, as it already does, to a **maximum**.

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With this sketch of the subject, it should be noted that of late N. or anarchism has sought to identify itself with evolution. It would regard society as an aggregate of organisms trying to combine the welfare of the individual and the species; there is a tendency to aggregates and to the progressive adaptation of these to surroundings. It quotes Herbert Spencer as saying that society marches toward the identification of altruism with egoism, and that organisms are so adjusted that energy expended for the general welfare checks that which is expended for the individual, and subordinates it so as to leave to individual welfare no greater part than is necessary to the maintenance of individual life. This seems, however, to favor extreme organized state socialism, though advocated by Prince Krapotkin, whose hope is in decentralization and free communism. Incidentally, he brings in evolution as founding moral science on the social needs and habits of mankind. And he finds corroboration of his doctrines in Bain's theory of moral habits; Guyau's morality without obligation or sanction, and in researches like Lubbock's in respect to animal societies.

The economies of anarchism, as lately elaborated, seem to pivot on free land and free mutual banking, individual or associated, the issues to be 'divisible receipts' representing the actual property of the individual or the company, and mutually received by widely organized agreements—this system being equivalent to Proudhon's national one of generalized bills of exchange in place of any currency proper, whether paper or coin; this would abolish money monopoly and interest, and give free capital, free exchange, and, with exemption from all taxation, free labor. It is not enough to make land free to occupancy and use. The monopoly of exchange and credit is worse than land monopoly; 'it carries with it privileged capital, extortion of interest, the struggle of profits, the greater part of the necessity for taxation and the prime cause for labor exploitation.' (D. D. Lum.)

As to incidents in the history of N., the following may be mentioned: 1859, societies in the agricultural college at Petrovski, where, 14 years later, a false emissary of Bakunin was assassinated, and the assassin implicated 183 persons, of whom 99 were sent to Siberia 1877; 1864, Tchernyshevsky exiled to Siberia; 1867, the Czar shot at when riding with Napoleon III. in the Bois de Boulogne—same year, Bakunin formed the International Alliance of Socialistic Democracy; 1869, students' demonstrations and manifestoes; 1871, trials and many exiled; 1875, rising of students with red flag, at Kazan; 1876, a Nihilist proclamation on its way to Russia seized at Königsberg; 1878, chief of police Mezentzoff assassinated; same year, Vera Sassulitch tried for killing another chief, Trepoff, and acquitted by jury, since which such cases have been tried by court-martial; same year assemblages of the people prohibited, and a socialistic pamphlet circulated advising the *lex talionis* policy; 1879 Prince Krapotchkin, gov. of Kharkov, shot, also a commander of gendarmerie at Kiev, and others

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—many incendiary fires—an explosion in the winter palace—April 2, Solovieff shot at the Czar—a train of cars for Moscow blown up, but the emperor had taken another train; 1881, the Czar killed; 1882, the public prosecutor at Kiev assassinated, and a mine discovered under the Moscow cathedral, where the coronation of the new emperor was to occur; same year, anti-terrorist societies were formed; 1883, many arrests tended to subdue conspiracies, and one noteworthy murder took place—a lieut. col. of the St. Petersburg gendarmerie by a revolutionist; 1884, political assassinations in Odessa, the Univ. of Kiev closed after arrest of 168 students, and many trials of military officers; 1885, a noted prosecution of officials and other persons of high position at Warsaw; 1887, a constitutionalist conspiracy of wide extent disclosed, several attempts to kill the Czar defeated, and the woman's college at St. Petersburg closed; 1888, students' riots on account of oppressive regulations, and some universities closed; 1889, a Nihilist leader pardoned on public abjuration, while a refugee in Switzerland, where a new plot against the Czar came to light; and, in place of a common revolutionary effort, traces were found of various societies with various objects and methods.—'Stepniak,' transl. from It. 1883, gives account of the origin and aims of Nihilism. See COMMUNISM: SOCIALISM: INTERNATIONAL, THE.

NIHILISM. in Philosophy; or **NON-SUBSTANTIALISM:** doctrine that the phenomenal universe, whether matter or mind, can be resolved in ultimate analysis to nothingness—'mere appearances with no credible substratum of reality.' To borrow phrases from the French assembly, philosophical nihilism is the extreme right, and pantheism the extreme left, of philosophy, while idealism is the right centre and materialism the left centre. The designation, philosophical nihilists, is applicable not only to the directly dogmatic, but also to those who make nihilism the ultimate issue of all reasonings about existence that do not begin with some *a priori* postulate. Between the centres, above mentioned, place should be found for dualism, affirming both matter and mind, and monism, which identifies the two, but has no more philosophical basis than materialism. See **IDEA**, and references thereunder.

NIIGATA, *nē-ē-gá'ta*: city of Japan, lat. 37° 57' n., and long. 139° e., on the w. part of the island of Nippon, the principal city of the province of Echigo, and one of the first ports opened to foreigners. N. covers about one sq. m. of sandy ground, and has numerous canals communicating with the Shinano river, upon which it borders. There is a college founded 1870; a hospital, and several public gardens. There is a large trade with the inland regions, and considerable traffic by way of the sea, though the latter is greatly curtailed by a bar at the mouth of the river. Climate in winter is severe. Pop. (1898) 53,366.

NIJM'FGEN: see **NIM'EGUEN**.

NIJNI-NOVGOROD.

NIJNI-NOVGOROD, *nĭzh'nĕ-nŏv-gŏ-rŏd'*: important govt. in the e. of Great Russia, between the govts. of Vladimir on the w. and Kazan and Simbirsk on the e.; 19,390 sq. m. (according to the *Almanach de Gotha*). The surface is divided into two distinct portions by the Volga with its tributary the Oka. On the left, the n. bank of the river, the surface is flat; on the right bank it is hilly. As the climate is severe, the soil is not very fertile, and there are few rich meadow-lands. There are many obstacles to agriculture, which, however, is the chief occupation. The inhabitants are engaged much also in petty manufactures, in which the peasantry have made noticeable progress; thus cutlery employed (1880) 6,000 families in Pavlovo and Vorsma. The chief rivers are the Volga, Oka, and their numerous tributaries. There is communication by water with 24 govts., and with the Baltic, the White, and the Caspian seas. The n. districts abound in forests; and here wooden utensils and tools are manufactured. There are several large iron-works, and the town of Gorbatoſ is the Sheffield of its district. Leather, especially the variety called Russian leather, is largely manufactured, and sheep and lamb skin dressing is a staple employment. On the right bank of the Oka are several ship-building and dock yards. The towns and villages are filled with an industrious and thriving manufacturing population. The people belong mostly to the Greek Church. Education is at a low stage. Cap. Nijni-Novgorod (q.v.). Pop. of govt. (1880) 1,376,000; chiefly Great Russians, also Nordvinians (50,600), Tartars (42,650); (1890) 1,569,500.

NIJ'NI-NOVGOROD' (Lower Novgorod), or simply NIJ'NI- famous commercial and manufacturing town in the e. of Great Russia, cap. of the govt. of N.; at the confluence of the Oka with the Volga, 715 m. e.s.e. of St. Petersburg, 276 m. by rail e. of Moscow. The fortified portion of the town occupies a hill overlooking the Volga, and is surrounded with a wall. It contains the Kreml or citadel, two cathedrals, and the palaces of the governors. The manufactures include cloth, leather, steel goods, wax candles, tobacco, beer, pottery, etc., and ship-building. The trade of the town is of great importance, especially during the great annual fair which brings buyers and sellers from all climes between Germany and China. For the convenience of those frequenting the fairs, an enormous market-hall has been built, and 60 blocks of buildings for booths, containing 2,530 apartments separated by fire-proof walls. The numerous churches of the citizens are supplemented by a mosque and an Armenian church for the visitors. There are three annual fairs, two of them of minor account. The third, beginning at the end of July and continuing into Sep., is by far the greatest in the world. The normal population is then increased to nearly 350,000; and the value of the goods sold at the great fair of 1883 was about \$125,000,000. N. is favorably situated for commerce, and has brisk trade during the whole season of navigation.

N., founded 1221, was devastated on several occasions

NIJNI-TAGILSK.

by the Tartars; and 1612, when it was on the point of falling a prey to Poland, Minin, the famous butcher of N., collected an armed force here, which, under Prince Pobjarsky, drove the invaders from the capital: see Moscow. The prosperity of this town dates from 1817, when the great fair was removed to N. from Makarief, on account of the destructive fire in the latter place. Pop. of N. about (1886) 66,585; (1888) 73,126.

NIJNI-TAGILSK, *nĭzh'nĕ-tâ-ghĭlsk'*: town of Russia, govt. of Perm, amid the Ural Mountains, 150 m. e. of Perm. It is one of the most important mining towns in the world. The soil in the immediate vicinity is everywhere rich in iron, copper, gold, and platina; not far off is the famous magnetic mountain Blagodät, 1,422 ft. high. Akimfi Demidoff (q.v.) established the first foundry here 1725. The yield both of iron and copper is immensely large. Pop. (1886) 40,000.

NIKKO—NIKOLSBURG.

NIKKO: one of the holy places of Japan, on the mountains of the same name (meaning the sun's brightness); about 95 m. n. of Tokio. It is the seat of a temple of unknown antiquity, and of a Buddhist temple founded 767, and contains the tomb of Tokugawa Iyeyasu, who founded the great military dynasty which held sway 1603–1867, and who was the most illustrious figure in the history of the empire. It contains also a great number of temples, shrines, and monuments, some of which are magnificently decorated. For hundreds of years it has been the resort of multitudes of pilgrims, and the mikado annually sent an envoy to pay respect to the mighty dead. Its natural attractions and artistic treasures combine to make it the most remarkable place in the country, and a favorite resort of travellers. The Kiri-furi falls, 700 ft. in height, are about seven m. distant.

NIKOLAEF, *nē-kō-lá'ěf*: town of s. Russia, govt. of Kherson, 40 m. n. w. of the town of Kherson; at the head of the estuary of the Bug, at the confluence of that river with the Ingul; 42 m. from the Black Sea. It was founded 1790, and its situation was so convenient for ship-building that it soon became the centre of the naval administration of the Black Sea. It has broad straight streets, containing several barracks, a cathedral, schools for pilots, hospital, an observatory, and an arsenal. In the first half of the 19th c., about 10,000 men were employed at N. in ship-building and other naval operations. Since the opening of the railway system by which it has connection with Moscow, etc., pop. and trade, especially the grain exports, have greatly increased. The disadvantage of the location is that the bar has only 18 to 21 ft. of water, so that fully armored ships are unable to pass it. Pop. (1880) 82,805, 45 per cent. milit., and 7,000 Jews; (1890) 76,578.

NIKOLAEVSK, *nē-kō-lá'ěvsk*: chief town of the Amur territory, in e. Siberia, on a well-wooded plateau on the left bank of the Amur, 22 m. from its mouth, 6,750 m. e. of St. Petersburg. The approaches to the town are defended by four batteries. The Amur is here a mile and a quarter broad, but the landing-place is available only for small craft, all large vessels being compelled to lie in mid-stream. N. was founded 1851; in 1855, it consisted of 150 houses, and 1858, of 249 houses. It is the seat of naval and civil administration, and the centre of the commercial activity of the district. It is a station on the Siberian-American telegraph. Pop. (1880) 5,314.

NIKOLSBURG, *nē'kōlss-bûrch*, or **MIKULOV**, *mē'kô-lŭv*: town of Austria, in s. Moravia, 27 m. s. of Brunn, at the foot of the Pollaver Hills, famous for their rich red wines. The town belongs to the princely family of Dietrichstein. It has several steam mills, and cotton and silk factories. In the middle of the town, upon a rock stands the Castle of the Dietrichsteins, with a library of 20,000 vols., and a vat in the cellars capable of containing 2,000 eimers (more than 30,000 gallons). Pop. (1880) 7,642, of whom more than half are Jews; (1890) 8,210.

NIKON—NIKOSIA.

NIKON, *nē'kōn*: patriarch and reformer of the Russian Church: 1605–1681. His parents were in lowly circumstances, living not far from Nijni-Novgorod, and he was educated by a monk. While a recluse in the hermitage of Anserche, the enmity of a fellow-monk, whom he found to be dishonest, drove him to seek a new retreat, and he founded a monastery on the island of Kij at the mouth of the Onega river. Later, he visited Moscow, and by Czar Alexis Micaïlov was placed at the head of the Novospasky convent in that city; 1648 he became metropolitan, and four years later succeeded the patriarch Joseph. Under him a council was convened to revise the Slavonic Scriptures, 1654. The publication of this revision, and his efforts to reform ecclesiastical abuses, intensified a conservative opposition to him connected with social and political changes. Luxury, and political ambition on the part of some leading nobles, were regarded as Polish innovations; and the church and its dignitaries were accused of similar tendencies. The opposition gathered to itself all who were for the old order against centralization in church and state, and hence against all changes. It rose to the degree of fanaticism; and insurrections followed, attended by severe imperial persecutions; and the ultimate result in the church was reactionary and degrading. But Nikon, except it were in hierarchical notions, was a reformer, and a man of practical piety. From the churches, he removed pictures that were idolized; he sought to promote temperance and education; he brought about by his example and encouragement a practical reform in preaching, and he was devoted to every charitable work. His enemies, however, prevailed with the Czar against him. Retiring to his monastery and refusing to return, he was deposed from the patriarchate 1667. He lies buried in the monastery of the 'Resurrection of Christ.' A collection of chronicles down to 1630, made by him, is known by the title *Chronicles of Nikon*. Among his writings are a book of prayers, a scheme of dogmatic studies, and *The Intellectual Paradise*—a description of the monasteries of Mount Athos and Valdi. By his enterprise 500 Greek books of the 11th to 17th c. were brought from the East. Printing presses were established, and Greek and Latin were introduced into Russian schools. The Russian patriarchate began 1592 and was abolished 1781.

NIKOPOL, *nē-kō'pōl*: thriving town of s. Russia, govt. of Ekaterinoslav, on the right bank of the Dnieper, about 200 m. from its mouth, lat. 47° 33' n. N. is the centre of an extensive agricultural district, the produce of which is shipped to Odessa. Between N. and the port of Odessa, there is regular communication by steam-boat. Pop. (1880) 9,706.

NIKOSIA, *nē-kō-zē'ā*: capital of Cyprus: see **LEFKOSIA**.

NILE.

NILE, *nīl* (*Nīlus*), called by the Egyptians, *Hapi Mu* (genius of the waters), and by the Hebrews *Sihor* (the black): great river of n.e. Africa formed by the union of the Bahr-el-Abiad (the White or True Nile) and the Bahr-el-Azrek (Blue Nile). Captains Speke and Grant discovered that the first of these, the true N., flowed out of the enormous Victoria Nyanza, a lake about 200 m. in diameter, from about lat. $0^{\circ} 20' \text{ n.}$, to $2^{\circ} 48' \text{ s.}$, and from long. $31^{\circ} 40' \text{ to } 35^{\circ} \text{ e.}$, about 4,000 ft. above sea-level; and the river Shimiyyu, the largest tributary of this lake, flowing into its southern extremity, must now, according to Stanley (1875), be regarded as the most southerly and remotest upper stream of the N., having its source only about 300 m. w. of the Indian Ocean. Some recent travellers, however, find the upper Nile stream in the Kagera river (Alexandra Nile of Stanley), navigable about 50 m. from its entrance into the Victoria Nyanza, on its w. shore, and believed to rise 200 or 300 m. s.w. The second, the Blue Nile, has its source in Abyssinia, lat. $10^{\circ} 59' \text{ n.}$, long. $36^{\circ} 55' \text{ e.}$

The White N., from its outfall from the Victoria Nyanza at the 'Ripon Falls,' lat. $0^{\circ} 20' \text{ n.}$, long. $33^{\circ} 30' \text{ e.}$, flows n.w. and w. about 230 m., till it enters the Albert Nyanza (q.v.) within 30 m. of its n. extremity, where the river again emerges. Issuing from the Victoria Nyanza, the N., dropping about 12 ft. over the rocks, with a width of about 400 ft., rushes down north like a mountain-torrent, running off at last into long flats, and expanding so as to form what is called Ibrahim Pasha Lake. In this part of its course the river is navigable, and continues to be so until it reaches the Karuma Falls. From these falls to the Murchison Falls (120 ft. in height, 25 m. above its entrance into the Albert Nyanza) the river forms a series of rapids. Between the two Nyanzas the N. is known as the Victoria N., or Somerset river.

After leaving the Albert Nyanza, the N. begins its n. course to the Mediterranean, and has no further lake expansion. Between the Albert Nyanza and Gondokoro (Ismailia), in $4^{\circ} 55' \text{ n. lat.}$, $31^{\circ} 51' \text{ e. long.}$, 1,500 ft. above the sea, the N. river descends several hundred ft. in a series of rapids and cataracts. For about 500 m. after Gondokoro, the N. flows very tortuously, first n.w., and then n.e.; and is joined, about lat. $9^{\circ} 15' \text{ n.}$, long. 30° e. , by its first great affluent, the Bahr-el-Gazal, which joins the Nile from the w. with hardly any perceptible current. The second tributary is the Giraffe river, about one-third the volume of the N. at its point of junction, long. 31° e. From the Bahr-el-Gazal the N. flows due e. about 80 m., then s. 30 m., when it is joined by its third tributary, the Sobat river, from the e. The Sobat is full and navigable. Between this and the town of Khartoum, about 460 m., the N. flows n. with width of one to two m., and is joined by several streams from the e. side.

Khartoum, cap. of Nubia, is at the confluence of the Bahr-el-Azrek (Blue N.) and the Bahr-el-Abiad (White or True N.), 1,188 ft. above sea-level, lat. $15^{\circ} 35' \text{ n.}$, long. 32°

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30' e. The Bahr-el-Azrek, long supposed to be the main stream of the True Nile, is formed by the junction of the Abai and the Blue river. The Abai has its source in Abyssinia, 50 m. from Lake Dembea, which it enters from the s.w.; emerging on the s.e. of the lake, it flows about 90 m. s.e., then describes a semicircle round the peninsula of Godjam, and continues n.w. about 150 m. It is here joined by the Blue river from the s., and from this point the Blue N. flows n.w. to Khartoum, receiving from the e. two large rivers running nearly parallel to each other, the Dender and the Rahad or Shinnfa. From Khartoum, the united stream flows n. about 60 m., passing the town of Halfaia and the ruins of Meroë to the first cataract, and thence n.e. past Shendy (q.v.) to its junction with the Atbara, which enters the N. at El Damer, lat. $17^{\circ} 45'$ n., long. 34° east.

The Atbara, called also Bahr-el-Aswad, or Black river, because it carries down with it the greatest amount of the black mud and slime that manures and fertilizes Egypt, is the last tributary received by the Nile. The Goang seems to be the direct source of the Atbara. It rises in the heights n. of Lake Dembea. About 150 m. from its source it receives the Basalam river, and about 30 m. further on, the Takazze or Setit river, both from the e. The Takazze has a far greater volume of water than either of the preceding rivers. It rises in the Samen Mountains, round which it flows first e., then n., till in about lat. $13^{\circ} 30'$ n., long. $38^{\circ} 5'$ e. it turns n.w., and then almost due w. joining the Atbara at right angles.

From its junction with the Atbara, the N. continues to flow n. through the populous and fertile district of Berber, full of villages; and then enters the desert. Turning w. in lat. 19° n., it forms the large island of Mogrât, and makes a curve to the s.w., known as the 'great bend,' in which are two cataracts. Entering Nubia, the Nile resumes its n.w. course, with narrow strips of cultivated land on each bank. Here it forms another cataract, and bends round to the n.e. with a fifth cataract, lat. $21^{\circ} 40'$ n. After this the valley of the N. narrows, and at Assouan it forms the last cataract in descending. The great dam at this place was opened with much official ceremony, 1902, Dec. 10.

From Assouan to the sea, the average fall of the N. is two inches to a m., and its mean velocity about three m. an hour. It waters and fertilizes the whole length of the land of Egypt. The delta of the N. extends from lat. $30^{\circ} 10'$ n. to $31^{\circ} 30'$ n., and has a base on the Mediterranean of about 150 m. In it the N. spreads out into numerous streams, the two principal being those of Rosetta and Damietta. The total length of the Nile, from its exit from the lake to the sea, is about 3,300 m. measured along its course, or 2,200 m. direct distance. If, beyond Victoria Nyanza, the Shimiya be taken as the upper stream of the N., the total length is about 3,800 m., and direct distance 2,600 miles.

A feature peculiar to the river of Egypt is, that from its

NILE.

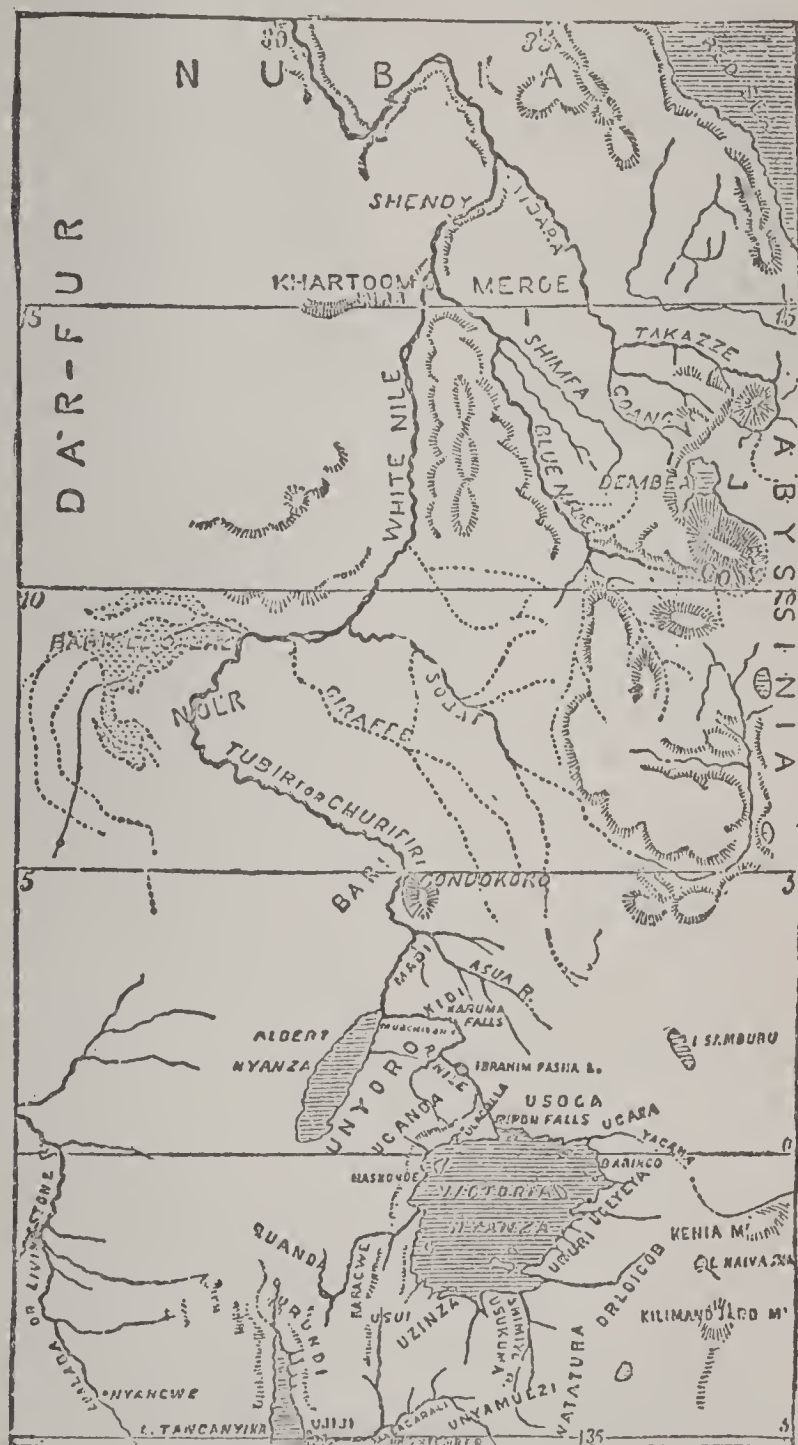
junction with the Atbara, to its mouth, more than 1,500 m., it receives no affluent whatever, and yet it is able to contend with the burning sun, and scarcely less burning sands of Nubia. With the ancient Egyptians the river was held sacred: the god Nilus was one of the lesser divinities. Its annual overflow is one of the greatest marvels in the physical geography of the globe, for it has risen to within a few hours of the same time, and to within a few ft.—usually a few inches—of the same height, year after year for unknown ages. At Khartoum it begins to increase early in April, but in lower Egypt the inundation usually begins about June 25, and attains its height in three months. It remains stationary about 12 days, and then subsides. The cultivable soil of Egypt is dependent wholly on the rise of the N., and its failure would cause a dearth; for, virtually, the country has no rain. Continuous south-wind brings a good, and north-wind a bad year. During a good inundation, the rise is about 40 ft. on the Tropic of Capricorn, 33 ft. at Thebes, and 4 ft. at the Damietta and Rosetta mouths in the Delta. If at Cairo the rise is only 18 or 20 ft., there is a scarcity; up to 24 ft., a deficiency; 25 to 27 ft. is good: more than that causes a flood, and fosters plague and murrain. During the inundation, the whole valley is covered with water, from which the villages rise like Islands, protected by dikes. Of late years the overflow has been greater than the average of many centuries. The rise and fall of the trunk stream of the lower N. is owing to the periodicity of the rains on the mountains of Abyssinia and in the basin of the Victoria Nyanza, where, on the equator, it rains, more or less, all the year round, most copiously during the equinoxes. See NILOMETER. The banks of the N. swarm with birds, among which are vultures, cormorants, geese, pelicans, quails, and the white ibis; and its sweet, soft waters teem with fish. The average amount of alluvium brought down by the river is estimated at a deposit of 4½ inches in a century—by some, it is made as high as 6 inches; the greater part of it is brought down by the Atbara.

The question of the source of the N. is at once the oldest and the most recent of geography. That the sources of a river, at whose mouth one of the earliest and most civilized peoples was established, should have been so long veiled in obscurity, is unparalleled in geographical research. The want of success in exploring the upper basin of the N. may be attributed to the great length of the river, to the difficulties which beset the traveller in the physical nature of the countries that he must pass through, the climate; and the jealousy, ignorance, and barbarism of the native tribes. This problem of centuries may now be regarded as satisfactorily solved; for the question, whether there may not yet be found important feeders of the White Nile carrying back its source to a still greater distance in the interior, is practically excluded by Stanley's exploration of the Lualaba or Congo basin. The journeys of Krapf and Rebmann to the foot of Kilimanjaro and the other snowy mountains in e. Africa, believed by them to be the ancient 'Mountains of the Moon,' and the explorations of the White N., pointed to

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the conclusion that it was among these mountains that the sources of the great river would ultimately be discovered.

There was, however, another theory. Rumors gathered from the natives pointed to lakes in the regions s. of the equator, as the true sources of the N. To explore this country, the distinguished traveller Capt. Richard Burton, accompanied by Capt. Speke, started from the Zanzibar coast 1857. Their



The Upper Course of the Nile.

enterprise was so far successful that they discovered Lake Tanganyika, lat. 5° s., long 36° e., and a large crescent-shaped mass of mountains, overhanging the n. half of the lake and 10,000 ft. high, considered by Capt. Speke the true Mountains of the Moon. On the shores of Lake Tanganyika, Burton was laid up by illness, and his companion, after sur-

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veying the n. portion of the lake, left him there to recruit his health, while he (Speke) proceeded n. to discover another huge 'nyanza' or lake, of which he was informed by the natives. This he accomplished 1858, Aug. 3, when he discovered the s. end of the Victoria Nyanza (q.v.). In his journal he says of this immense sheet of water: 'I no longer felt any doubt that the lake at my feet gave birth to that interesting river, the source of which has been the subject of so much speculation, and the object of so many explorers.' Certainly its vastness gives it prominence as the great reservoir of the mighty N; but the head water of the river is rather one of the streams which empty into the Nyanza.

In 1861, Capt. Speke, taking with him Capt. Grant, returned to the lake region. The expedition approached Victoria Nyanza again from the coast of Zanzibar; and the first place from which they obtained a view of it, during the second expedition, was the town of Mashonde on its w. side. Thence they pursued their way along the shore northward. Crossing the equator, they reached streams which are said to flow out of the lake, and further on, in the centre of its n. coast, what they considered to be the parent stream of the Nile, 150 yards in breadth, flowing over rocks of an igneous character, and forming falls 12 ft. high, which Capt. Speke christened 'Ripon Falls,' in honor of Earl de Grey and Ripon, pres. of the Royal Geog. Soc. at the start of the expedition.

In the kingdom of Karagwé, Capt. Speke found a very superior negro race, much better disposed to strangers than any of the tribes that he had formerly met. The country occupied by this race, and that of Uganda, stretches along the Nyanza, and covers half of its w. and n. shores, the Uganda being bounded e. by the main stream of the Nile. N. of it lies the kingdom of Unyoro, where the dialects belonging to the language of s. Africa, and which up to this point are used by the various tribes, suddenly cease, and give place to those of the language of n. Africa.

At Gondokoro, Speke and Grant were met by Mr. (now Sir Samuel) Baker, who had come from Cairo to their relief. Baker, accompanied by his heroic wife, pushed still southward, and had the happiness of discovering, 1864, another great lake, which he called the Albert Nyanza. In 1869 he undertook for the Khedive of Egypt a great military expedition, to suppress slavery in the upper regions of the Nile; and reduced under the sway of that ruler the whole valley of the river as far as the Victoria Nyanza. See BAKER: GORDON: also EGYPT: SUDAN.

Meanwhile, Dr. Livingstone had been working for many years, from another quarter, at the solution of the great African problem—the true source of the Nile. In 1866, he began the great journey from which he was destined never to return. Starting from the Rovuma river, in the far south, he passed round the s. end of what was called 'Lake Nyassa,' proceeded n. exploring the lakes Bangweolo and Moero; and 1869 reached Lake Tanganyika, now known to send its outflow toward the Congo, but which he sought

NILES—NILL.

in vain to connect with Victoria Nyanza. In 1871, he was found by Stanley at Ujiji, on Lake Tanganyika, and it was then his opinion that neither Tanganyika nor Albert Nyanza nor Victoria Nyanza was the source of the Nile, nor any of the feeders of these lakes; but that it was to be sought in a basin westward of them, through which flow three large rivers, all called Lualaba, and which unite to form another great lake, which he called Lincoln. Out of this a river runs n., which he conceived to be the main branch of the Nile. Geographers in Europe and America generally believed that Livingstone mistook the case, and had struck instead on the source of the Congo; but the death of the great traveller before the completion of his explorations left the problem unsolved. It was not until Stanley 1876-7 followed the course of the Lualaba to its mouth that this stream was definitively proved to be identical with the Congo. Stanley's explorations 1875, ere he struck the Lualaba, have given us more accurate information as to the size and shape of Victoria Nyanza (q.v.) and as to its affluent the Shimiya.

NILES. *nīlz*: city in Berrien co., Mich., on St. Joseph river, at head of navigation; on Michigan Central railroad; 93 m. e. of Chicago. A dam crossing the river supplies it with water-power. It has manufactories of various kinds, foundries, machine shops, 5 flouring mills, newspaper offices, public schools, and 8 churches. Large quantities of flour, grain, fruit, and lumber are shipped here. It was settled 1828. Pop. (1874) 4,592; (1880) 4,197; (1890) 4,197.

NILES, NATHANIEL: 1741, Apr. 3—1828, Oct. 31; b. South Kingston, R. I. After studying at Harvard he entered Princeton College, graduating 1766. He studied medicine, took a law course, taught in the schools of New York, and studied theology under Dr. Bellamy, Congl. pastor in Bethlehem, Conn. He was licensed to preach, and temporarily supplied various pulpits, making his home in Norwich, Conn. While residing here he invented an improved method of making wire, and built a factory for carding wool. At the close of the revolution he purchased some unimproved land in Vt., and built the first house in what is now the town of West Fairlee. In this house he preached for a long period. He was elected to the state legislature, was speaker of that body 1784, was a supreme court judge, was six times chosen presidential elector, assisted in the revision of the state constitution, and was a member of congress 1791-95. He was a trustee of Dartmouth College 1793-1820, and received the degree A.M. from this institution, also from Harvard. He wrote a popular war-song entitled *The American Hero*, was a contributor to the *Theological Magazine*, and published several sermons. He died at West Fairlee, Vermont.

NIL-GHAU: see **NYL-GHAU**.

NILL, v. *nīl* [OE. for *ne will*, not will]: in *OE.*, to not will; to refuse; to be unwilling.

NILOMETER.

NILOMETER, n. *nīl-ōm'ē-tēr* [L. *Nilus*; Gr. *Neilos*, the Nile, and Gr. *metron*, a measure]: a graduated pillar for ascertaining the height of the periodical rising of the Nile. **NILOTIC**, a. *nīl-ōt'ik*, relating to the Nile.—*Nilometer* was the name given also to two buildings in Egypt, one in the island of Rhoda opposite Cairo; the other at Elephantine, close to As-suan, 24° 5' 23" n. lat. The first consists of a square well, in which is placed a graduated pillar of marble, and is called a *mekkias* or measure; the pillar contains 24 *devakhs* or cubits, each of which measures 21·386 inches, or according to Greaves, 1·824 ft., and contains 24 digits; but in its present state, it does not appear to have been intended to mark a rise of more than 16 cubits. This pillar is exceedingly slender. The building formerly had a dome, bearing a Cufic inscription, dated 847, and is said to have been erected by the Caliph Mamun, or his successor Wathek Billāh. The first-mentioned monarch is said to have erected another N. at the village of Banbenouda, in the Saeed, and to have repaired an old one at Ekhnin. The Caliph El Motawukkel built the present one. The mode of calculating the increase at the N. is rather complex, and to a certain extent arbitrary, political and financial reasons rendering the process a mystery even to the natives. At the present day the Nile is supposed to have risen to 18 cubits when the canals are cut; this is the height of the lowest inundation; 19 cubits are considered moderately good, 20 excellent, 21 adequate, and 22 complete, 24 are ruinous. In the time of Edrisi, however, 16 cubits were considered sufficient. The object of these nilometers was to measure the amount of taxation to be imposed on the country. The N. at Cairo is, however, much more recent than that at Elephantine, which consists of a staircase between two walls descending to the Nile. One of these walls has engraved on it a series of lines at proper intervals marking the different elevations to which the river rose under the Cæsars. The cubits here are divided into 14ths or double digits and measure 1 ft. 8·625 inches. This N. is described by Strabo. Probably there were many nilometers in the days of the Pharaohs, perhaps one in each city. In the days of Morris, 8 cubits were sufficient, but 15 or 16 were required in the time of Herodotus, B.C. 456, and this was the mean under the Romans. According to Pliny, if the inundation did not exceed 12 cubits, it produced a famine, 13 starved the country, 14 rejoiced it, 15 was safety, and 16 delight, and this number is symbolically represented by the number of children playing round the river god on statues of the Roman period. The oldest N. appears to have been erected at Memphis, and it was transferred by Constantine to a church in the vicinity of the Serapeum; but Julian sent it back to this temple, where it remained till its destruction by Theodosius. At the present day, the rise is watched for with anxiety, and proclaimed by four criers.—Herodotus, II. 13; Strabo, lib. xvii.; Wilkinson, *Topogr. of Thebes*, 311-317. Hekekyan Bey, *Siradic Monuments* (Lon. 1863), 145.

NILSSON—NIMBUS.

NILSSON, *nīl'son* (ROUZAUD, *rj-zō'*), CHRISTINE; now Countess CASA DE MIRANDA: singer: b. Hussaby, near Wexiö, Sweden, 1843, Aug. 3; of a peasant family with musical tendencies. She taught herself the flute and violin, and sang with an older brother at peasant fairs in Sweden. It was thus she attracted the notice of her benefactor. After studying 2 years under Franz Berwald, she made her début in Stockholm, 1860; she studied 3 years in Paris and made her first appearance there 1864, Oct. 24, as Violetta in *La Traviata*; appeared London, 1867, in opera and oratorio; 1868, in Paris at the Grand Opera House as Ophelia in Ambroise Thomas's *Hamlet*, and in the same year she created a great sensation at the Handel Festival, in London. Her first appearances in the U. S. were in 1870 in concerts, 1871 in opera. She reappeared in London, at Drury Lane, 1872; visited St. Petersburg 1873; sang in Italian opera in London every season 1872-1877; revisited the United States 1873-4 and 1882, and made a tour of Scandinavia 1876. Her last appearance at New York was 1883, Apr. 16. She sang at a farewell concert in Albert Hall, London, 1883, June. Her voice is of moderate power, but remarkable for purity, sweetness, and brilliancy of tone, with a compass of nearly 3 octaves. Her most successful characters are Marguerite, Elsa, and Mignon. She has always been enthusiastically received and her success is unsurpassed. Her charming personality helps to render her popular. She married, 1872, London, Auguste Rouzand, a Parisian banker, who died 1882; in Paris, 1887, Mar. 12, she married Count A. de Miranda of Spain.

NIMBLE, a. *nīm'bl* [AS. *numol*, capable of catching: Icel. *nema*, to take: Dan. *nemme*, to learn, to apprehend]: light and quick in motion; active; brisk; expert. **NIMBLY**, ad. *-bli*. **NIMBLENESS** n. *-bl-nēs*, the quality of being nimble; quickness; celerity. **NIMBLE-FOOTED**, a. light of foot. **NIMBLE-FINGERED**, a. dexterous; in a bad sense, given to pilfer. **NIMBLESSE**, n., or **NIMBLESS**, n. *nīm blēs*, in *O.E.*, for nimbleness.—**SYN.** of 'nimble': agile; swift; quick; lively; prompt; expeditious; ready; speedy.

NIMBUS, n. *nīm būs* [L. *nimbus*, a bright or black cloud, a cloud shaped splendor: It. *nimbo*: F. *nimbe*]: the rain-cloud (see **CUMULUS**); in *anc. myth.*, the cloud of light around the person of a god when he appeared on earth: in *art*, the circle of light around the heads of saints or sacred personages; a halo. **NIMBIFEROUS**, a. *nīm-bīf ēr-ūs* [L. *fero*, I carry]: bringing clouds and storms.—**SYN.** of 'nimbus': aureola; glory; halo.—*Nimbus*, in mythologic art, was in almost universal use in those religions of which we possess any artistic remains—the Indian, the Egyptian, the Etruscan, the Greek, and the Roman. In the Hebrew Scriptures, we trace, in the absence of representations, the same symbolized idea in the light which shone upon the face of Moses at his return from Sinai (Exod. xxxiv. 29-35), and in the light with which the Lord is clothed as with a garment, Ps. ciii. 1, Vulg. (civ. 1, auth. vers.); and in the New Testament in the transfiguration of our Lord (Luke ix. 31)

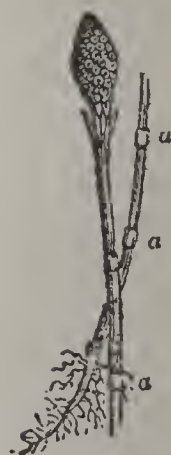


Niobe. Antique, Florence.

The Nimbus as variously represented in Sacred and Legendary Art: 1, God the Father; 2 and 3, Christ; 4, Charlemagne; 5, Emperor Henry I.



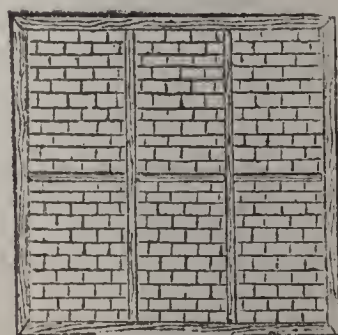
Noble of Edward III. A. Actual diameter of the coin.



a, a, Nodes.



E. Nembril.



Nogging.

and in the 'crowns' of the just, to which allusion is so often made (II Tim. iv. 8; I Peter v. 4; Rev. iv. 4). Nevertheless, the N., strictly so called, is comparatively recent in Christian art, appearing first toward the end of the 5th c. Later in Christian art, it became almost a necessary appendage of all representations of God or of the saints. Its ordinary form is the circular or semi-circular; a form, indeed, in which later symbolists discover an emblem of perfection, and of eternity; but the N. of the Eternal Father is often in the form of a triangle, and that of the Trinity an emanation of light, the rays of which form the three arms of a cross. The nimbus of the Virgin Mary is sometimes a simple ring, sometimes a crown or diadems; occasionally it is encircled by an ornamental border, on which 12 stars are sometimes represented. Her N., as well as that of the Divine Persons, is commonly of gold; but that of the Virgin Mary is occasionally in colors, e.g., blue, red, purple, or white. The N. of the saints is ordinarily the semicircle or lunula. Dedron mentions the curious instance of a picture of the traitor Judas *with a black nimbus*. In later art, the N. became lighter and more aërial, melting, as it were, into the picture; and in Raphael's saints it occasionally fades into the very faintest indication of a golden tinge around the head.—In connection with the N. may be mentioned two analogous forms—the *Aureole* and the *Glory*. The former is an illumination surrounding, not the head only, but the entire figure. If the figure be upright, the aureole is commonly oval, when it is called the *vesica piscis*, and is supposed to contain an allusion to the *ichthys* (q.v.). With a seated figure it becomes circular, and is occasionally divided by radiating bands, in the form of a wheel; sometimes it takes a quatrefoil form. It is usually of gold, but occasionally in colors. The Glory is a combination of the N. and the aureole, and is seen chiefly in Byzantine pictures, and those of the early South German school.

NIMEGUEN, *nē mēh-ghēn*, or NIMWEGEN, *nīm'wā-ghēn*, or NYMEGEN, *nī'mēh-ghēn* (Dutch NIJMEGEN, *nī'mēh-ghēn*): probably the oldest city in Gelderland, Netherlands, on the left bank of the Waal, 9 m. s. of Arnheim. The French name of N., *Noviomagum* of the Romans, is *Nîmègues*. Several of the streets are steep and narrow, passing up the Hoenderberg (Hill of the Huns), on which the Romans had a permanent camp; others are broad and well built. On a near height, Charlemagne built a palace. On the brow of the hill there is a little 16-sided chapel or baptistery, originally a heathen temple of the Batavi, and converted into a Christian church by Pope Leo III. 799. On another eminence is a modern tower called Belvidere, from the summit of which is an extensive view, including the rivers Rhine, Waal, Yssel, and Maas. N. is strongly fortified and well garrisoned. The town-house, founded 1554, is beautifully and antequely fitted up within; and externally ornamented by several statues of emperors and kings of the Romans. St. Stephen's, or the Great Church, on the highest part of the city, is a handsome Gothic edifice

NÎMES—NIMROD.

in the form of a Greek cross, and before the Reformation contained 30 altars. N. is a large market for cattle and agricultural produce, especially grain. Beer is extensively brewed, eau de Cologne distilled, and there are factories for spinning and weaving; tin-goods and earthenware stoves are manufactured.

N. is celebrated for the great peace congress of the European powers which 1678, Aug. 10, concluded a treaty between Spain and France; Sep. 17, between France and the United Netherlands; and between the German Empire and France, and the same empire and Sweden, 1679, Feb. 5. Pop. (1881) 26,629; ,1891) 32,618; (1901) 45,304.

NÎMES, or NISMES, *nēm* (anc. *Nemausus*): town of France, cap. of the dept. of Gard; in a fertile plain surrounded by vine-clad hills, 30 m. n.e. of Montpellier, with which it is connected by railway. It consists of the town proper (ill built and dirty), and of three handsome suburbs. In the vicinity are the beautiful remains of the Roman aqueduct *Pont du Gard*. The chief of the modern edifices are the *Palais-de-Justice*, the theatre, and the hospitals. The *Grande Place* is embellished with one of the most magnificent fountains in France. N. contains numerous and variously-constituted educational institutions, an important public library, Maria Theresa's Museum (in the *Maison Carrée*), museum of natural history, etc. It is the general entrepôt for the silks produced in s. France, and its manufactures are principally silk and cotton fabrics. More than 10,000 looms are constantly in operation in the city, and about 6,000 in the immediate vicinity. Shawls, handkerchiefs, lace, brandy, wines, etc., are made. Within the town are numerous and beautiful Roman remains, chief of which are the amphitheatre; *Maison Carrée* (Square House), a fine specimen of Corinthian architecture; a temple and fountain consecrated to Diana; *La Tour Magne* (Great Tower); the baths, and two Roman gates. See Menard's *Antiquités de N.* (1838), and his *Histoire de N.* (7 vols. 1875).

Previously to the Roman invasion. N.—supposed to have been founded by a colony from Massilia (Marseille)—was the chief city of the Volcæ Arecomici. It flourished under the Romans, and was one of the great cities of Gaul. It was under the rule of the Visigoths 465–535, afterward under that of the Franks. Subsequently, it became a possession of Aragon; but was finally restored to France 1259 by the treaty of Corbeil. The inhabitants adopted Calvinism in the 16th c., and on many occasions suffered severely for their religious principles. In 1791 and 1815, bloody religious and political reactions took place here. Pop. (1881) 62,549; (1891) 71,623; (1901) 80,605.

NIMROD, n. *nīm'rōd*: the mighty hunter of Scripture, Gen. x. 9; 'a mighty hunter, and his prey man' (*Milton*): thence, a great hunter; a devastating warrior.

NIMRÚD—NINE.

NIMRÚD, *nīm-rôd*: area of ruins near the junction of the Tigris and the Zab rivers, in Asiatic Turkey. The ruins are of the ancient city Kalhu, the Calah of the Bible, for a time the capital of Assyria, and founded by Shalmaneser I. B.C. 1300—Assur, further south, having preceded it as the royal residence, and Khorsabad and Nineveh following it. Layard first excavated the remains—a quadrangle, about a mile and a third by a little over a mile in dimensions. A wali had inclosed it, with towers and moats. The principal palace, in the n.w. quarter, was built by Assur-nasir-pal, who removed his residence to Calah, and also erected a temple with a great tower. He was succeeded B.C. 860 by Shalmaneser II., builder of the central palace, and conqueror of the league of three kings—Ahab of Israel, Benhadad of Damascus, and Baasha the Ammonite. The s.w. palace was that of Esarhaddon; the s.e. one was chiefly a temple of Nebo—a statue of whom, taken from it, is now in the British Museum. The n.w. palace was 350 ft. square. After Assur-nasir pal's restoration of Calah, it remained the royal residence 170 years, when Sargon, invader of Samaria, made Khorsabad his seat. Nineveh afterward became the capital under Sennacherib, and was destroyed, with Calah, by the Medes and Babylonians, B.C. 608.

NIMRUD', BIRS: see **BABEL, TOWER OF**.

NINCOMPOOP, n. *nîn'kôm-póp* [said to be a corruption of the L. *non compos*, not competent, in the phrase, *non compos mentis*, not possessing mind, of unsound mind]: a fool; a trifle; a silly fellow.

NINDE, *nînd*, **WILLIAM XAVIER**, D.D.: b Cortland, N. Y., 1832, June 21. He graduated from Wesleyan Univ. 1855; taught in Rome, N. Y.; became a Meth. Episc. minister 1856, and after various pastorates in O., visited Europe and Palestine 1868-9; was prof. of theol. in Garrett Biblical Institute, Evanston, Ill. 1873; and became pres. of that institution 1879. He was pastor of the Central Meth. Episc. Church, Detroit, 1876-79; delegate to the Ecumenical Conference, London, 1881; was elected bp. 1884; visited India 1885-6, when he re-organized the conferences and inspected the missions; and attended the Denmark conference 1887.

NINE, a. or n. *nîn* [Dut. *negen*; Icel. *nîn*; Sw. *nio*; Goth. *nîun*, nine: L. *novem*; Gr. *ennēā*; W. *naw*; Skr. *navan*, nine]: one more than eight. **NINETEEN**, n. *nîn'tēn*, nine and ten. **NINETEENTH**, a. *-tēnth*, the ordinal of nineteen. **NINETIETH**, a. *-tī-ēth*, the ordinal of ninety. **NINETY**, a. and n. *nîn tī*, nine times ten. **NINTH**, a. *nînth*, the ordinal of nine: N. a ninth part: in *music*, an interval consisting of an octave and a tone or semitone; being the same interval which, an octave lower, is termed the second (see **INTERVAL**). **NINTH'LY**, ad. *lī*, in the ninth place. **NINEFOLD**, nine times repeated. **NINE-HOLES**, an old game played with a ball and nine holes in the ground. **NINE-PINS**, a play with nine pieces of wood placed on end and aimed at with a ball. **NINE-MEN'S-MORRIS**, a dance by men dressed as nine-pins. **THE NINE**, the Muses.

NINEVEH—NINGPO.

NINEVEH, *nīn'ē-vēh*, or **NINUS**, *nī'nūs*: very ancient and famous city, cap. of the great Assyrian empire, said in Scripture (Gen. x. 11) to have been founded by Ninus or Nimrod. It was on the e. bank of the Tigris, opposite the present Mosul. According to the accounts of the classic writers, the city was of vast extent, 480 stadia, or more than 60 m. in circumference. Its walls were 100 ft. high, broad enough for three chariots, and furnished with 1,500 towers, each 200 ft. in height. In the *Book of Jonah* it is described as an 'exceeding great city of three days' journey,' and one 'wherein are more than sixscore thousand persons that cannot discern between their right hand and their left hand' (children or infants are probably meant). After having been for many centuries the seat of empire, it was taken after a siege of several years and destroyed by the united armies of the Medes under Cyaxares, and the Babylonians under Nabopolassar, about B.C. 625. When Herodotus, not quite 200 years afterward, and Xenophon visited the spot, there remained only ruins. Tradition continued to point to the site of N.; but it is only of late years that actual explorations have been made: for account of these, see ASSYRIA.

NINGPO, *nīng-pō*: great city and sea-port of China, at the confluence of two small streams, lat. 29° 5' n., long. 121° 32' e., 12 m. from the sea, on an alluvial flat of extreme fertility, intersected by a net-work of rivulets and canals; chief city of the dept. of N. in the province of Chekiang. Its walls are five m. in circumference, about 25 ft. high, 22 ft. wide at the base, and 15 at the top, with six double gates. As with all the cities in this part of China, N. is permeated by canals communicating with a moat nearly surrounding the walls, and with the adjacent country. In one part of the city they expand into basins, and receive the name of lakes—Sun Lake and Moon Lake. In the Sun Lake is an island devoted to temples, and accessible by bridges. These bridges—good specimens of those aerial stone edifices which adorn this part of China—are required to sustain little more than their own weight, as the roads here are all mere footpaths, and there are no wheeled vehicles. One of the rivers is crossed by a bridge of boats, 200 yards long. The entire city is well paved; the streets are wider than those of most Chinese cities, and the display of shops is indicative of wealth and luxury. Nowhere, save at Hanchau, are such extensive and beautiful temples. The most elegant and costly of these is dedicated to the Queen of Heaven; the goddess being the daughter of a Fuhkien fisherman, the people of that maritime province are her more special votaries. Elaborate stone sculpture, exquisitely fine wood carving, and a profusion of gilt and tinsel, show that no expense has been spared to honor the popular goddess.

The centre of the city is ornamented with an elegant 14-storied hexagonal tower with seven tiers of windows—the heaven-bestowed pagoda, 160 ft. in height. A spiral flight of steps within the walls of the tower leads to the summit, from which the gazer beholds a splendid scene; innumera-

NINIAN—NINNY.

ble villages dot the plain, which is reticulated by silvery water-courses, replete with evidence of successful commerce and agriculture. The population of the plain is about 2,000,000. On many of the hills which environ these cities, green tea is cultivated; while the mulberry, the tallow-tree, and numerous other stimulants of industry abound. Two crops of rice are procured annually from the fields; while the fisheries of the rivers and adjacent coast give employment to a numerous class of the population. Ice-houses close to the river give the banks a picturesque appearance; the ice is used for curing fish. N. has extensive coasting trade; and considerable foreign trade has been developed, notwithstanding the proximity and formidable competition of Shanghai. Its tonnage increased from 276,191 in 1873 to 303,109 in 1880: British shipping having advanced from 18,592 tons to 86,175, Chinese from 17,912 to 209,487; though the American had fallen from 170,351 to 2,100. The dist. city of Changhai, at the mouth of the Ningpo river, also is a port. A walled town, containing about 30,000 inhabitants, 10 m. e. of Changhai, is Kingtang, nearest of the Chusan archipelago. Tinghai is the dist. city of the island of Chusan, which is 20 m. long, 6 to 10 wide, and 51 in circumference; mountainous, with fertile valleys in high cultivation; it has an excellent harbor.

NINIAN, *nĭn'ĭ-an* (or NINIANUS, *nĭn-ĭ-ā'nŭs*, or NYNIAS, *nĭn'ĭ-as*), SAINT: apostle of the Picts; latter half of the 4th and beginning of the 5th c. Whether Christianity had been introduced among the Picts before the time of N. has been a subject of controversy; but though the details of the legendary account are uncertain, it seems beyond question that there were Christians, at least among the Southern Picts, in what is now known as the Lowlands of Scotland, from the end of the 2d c. Nevertheless, either their number was originally very small, or the rising church had fallen away under adverse circumstances; and it is certain that when N. appeared among them, the Picts were in the main a pagan people. He was a Briton, and of noble birth; but had been educated at Rome, and there ordained a bishop. The exact time of his preaching in Scotland is unknown. His labors appear to have commenced in Cumbria, and to have extended over the greater part of the district as far n. as the Grampian Hills, his see being fixed at Candida Casa, or Whithorn in the modern Wigtonshire. An old Irish account states that in his later years he labored in Ireland, founding a church in Leinster. The date of his death is unknown; it is placed by the Bollandists in 432; his festival in the Church of Rome is September 16.

NINNY, n. *nĭn'nĭ* [Sp. *niño*; prov. It. *ninno*, a child; Gr. *neniēlos*, foolish, senseless: mod. Gr. *ninion*, a child, a doll: comp. Gael. *neoni*, a fool, a nonentity]: a childish person; a fool; a simpleton.

NINON DE LENCLOS—NIOBE.

NINON DE LENCLOS. *nī-nōng deh lāng-klō'*: famous or infamous Frenchwoman, one of those characters that could have appeared only in the French society of the 17th c.: 1615-1705; b. Paris, of good family. Her father instilled into her mind the epicurean principles of Montaigne, whose *Essays* she read at the age of ten. As a child she was remarkable for grace of person and of manner. She was carefully schooled, spoke several languages, excelled in music and dancing, and had a great fund of sharp and lively wit. At the age of 16, she commenced her long career of licentious gayety, with a succession of favorites, many of whom were of the highest rank and social position. She had two sons, but never showed in regard to them the slightest instinct of maternity. In her later years she settled down to the social leadership of Paris; and men of letters and men of wit and refined ladies gathered to her salon. N.'s manners were perhaps more effective than her beauty: the most respectable and virtuous women sent their children to her house to acquire taste, style, politeness. So great was her reputation, that when Queen Christina of Sweden came to Paris, she said she wished particularly to visit the French Acad. and Ninon de Lenclos. Her wit and brightness are indicated by the fact that Laroche foucauld consulted her upon his maxims, Molière upon his comedies, and Scarron upon his romances. She died at the age of 90, having preserved some remains of her beauty almost to the last. In most of her biographies are many stories quite unauthentic.—See Guyon de Sardièrre's *Vie de Ninon de Lenclos*; Saint-Evremond's *Œuvres*; Douxmesnil's *Mémoires pour servir à l'Histoire de Mlle. de Lenclos*.

NIOBE, n. *nī'ō-bē*: in Greek mythology, daughter of Tantalus and (according to the most popular version of the story) sister of Pelops; she was wife of Amphion, King of Thebes, and bore him six sons and six daughters. Proud of her children, she despised Leto or Latona, who had only two children, Apollo and Diana, and prevented the people from the worship of these divinities; whereupon Latona, enraged, moved her children to destroy all the children of N. with their arrows. The slain 12 lay nine days in their blood unburied, when Jupiter changed them into stone, and on the tenth day they were buried by the gods themselves. N. wandered about in distress, and at last was changed into stone on Mount Sipylus, between Lydia and Phrygia, retaining, however, even as stone a sense of her woe. Such is the Homeric legend, afterward much varied and enlarged. N. was a favorite subject of the ancient artists. A group representing N. and her children was discovered at Rome 1583, and is now in Florence. Some of the sculptures are very beautiful. Even the ancient Romans were in doubt whether the work proceeded from Scopas or Praxiteles. N. in poetry is the personification of woman's sorrow.

NIOBIUM--NIPA.

NIOBIUM, n. *nī-ō'bī-ūm*, or **COLUMBIUM**, *ko-lūm'bī-ūm*: chemical element, of the Tantalum group, symbol Nb. The name Columbium, now discarded, was given to the N. in columbite, a black crystallized niobate of iron and manganese, found first in Mass., afterward in N. C. and Colo. From N., tantalum was separated by H. Rose. N. occurs also in Samarskite, pyrochlore, Wöhlerite, euxenite, and Fergusonite. As a metal, it is steel-gray, of high lustre, and resists acids at ordinary temperatures, except sulphuric, in which it rapidly dissolves to a colorless solution. **NIOBIC**, a. *nī-ō'bīk*. denoting an acid obtained from niobium.

NIOBRARA, *nī-ō-brá'ra*, **RIVER**, or **L'EAU QUI COURT**: stream about 450 m. long; rises in Laramie co., Wyo., flows e. through n. Nebraska, and joins the Missouri about 36 m. s.w. of Yankton, S. D. It is very swift in its course though shallow and not navigable; cuts through a deep cañon in its upper part, then passes through the sand hills of n. Neb., while the lower valley is fertile and well watered.

NIORT *nē-ōr'*: town of France, cap. of the dept. of Deux-Sèvres. on the Sèvre-Niortaise, 255 m. s.w. of Paris; in an agreeable country, occupying the slope of two hills and the valley which intervenes, 110 m. n. of Bordeaux. N. is an ancient town. In the 14th c. it was taken by the English and held 18 years. Its principal edifices are the Church of Notre-Dame, town-hall, theatre. and old castle. Besides these, the beautiful Fountain du Vivier, the promenades, the library (30,000 vols.), and the college are worthy of notice. Dressing of chamois and manufacture of gloves are principal industries. Dye-works and tanneries are in operation. Pop. (1881) 21,237; (1891) 23,225.

NIP, n. *nīp* [Ger. *knipp*, a snap or fillip with the fingers; *knippen*, to snap: Dan. *nappe*, to snap]: a pinch with the nails; a bruise or cut with something sharp; a cutting off the end; destruction of the ends of plants by frost; a sip, as of liquor: V. to pinch, as with the nails; to cut or pinch off the ends of anything; to blast; to kill or destroy; in *OE.*, to ridicule or satirize. **NIP PING**, imp.: **ADJ.** sharp; chilling; removing by biting or cutting, as with the nails or teeth. **NIPPED**, pp. *nīpt*. **NIP'PER**, n. he or that which nips. **NIPPERS**, n. plu. *nīp'ērz*, small pincers. **NIP'PINGLY**, ad. -*lī*. **TO NIP IN THE BUD OR BLOSSOM**, to destroy prematurely.—**SYN.** of 'nip, v.': to pinch; blight; numb; chill; vex; bite; ridicule; to kill or destroy.

NIPA, *nī'pa*: genus of endogenous plants referred by some botanists to the order *Pandanaceæ*, by others to palms. *N. fruticans* is very common in the Eastern Archipelago, and northward in s.e. Asia as far as the Mergui river, but becomes rare further n. It flourishes with the mangrove in places inundated when the tide rises. It abounds in saccharine sap, from which a kind of *Palm Wine* is made, also excellent sugar. The leaves are much employed for roofing houses, and large quantities are sent from the Tenasserim provinces northward for this use.

NIPADITES—NIPPON.

NIPADITES, n. plu. *nĭp'ă-dīts* [*nĭpa*, E. I. name of a fine palm]: genus of fossil palm fruits found in the Eocene clays of the island of Sheppey, in Kent, England. They are referred to *Nipa* (q.v.) as their nearest living ally, and are considered to have resembled in habit that genus, and to have grown on the banks of an immense river which flowed from the tropical regions of a continent lying southward, and which entered the sea at Sheppey, where it deposited the fruits and leaves borne down with the current, by the side of the starfishes and mollusca which inhabited the estuary. About 13 different kinds have been described.

NIPIGON, *nĭp'ĭ-gŏn* (or **NEPIGON**, *nĕp'ĭ-gŏn*). **LAKE**: body of water in Ontario, Canada, 40 m. n. of Lake Superior, n. of the line of the Canadian Pacific railway. It is about 70 m. long from n. to s., and 50 m. wide from e. to w.; surface is 813 ft. above Lake Superior; total length of shore about 580 m. The lake is deep, well studded with islands, abounds with fish, and is fed by a large number of mountain streams. It has its exit by the Nipigon river into Nipigon Bay, in the n. of Lake Superior. This river in its course expands into four small lakes, and has several falls and rapids.

NIPISSING, *nĭp'is-ĭng* (or **NEPISSING**, *nĕp'is-ĭng*), **LAKE**: body of water in Ontario, Canada, between Lake Huron and the Ottawa river; length about 45 m., greatest breadth 28 m. It is connected with a chain of smaller lakes in the n. by Sturgeon river; its waters flow out by French river, 55 m. long, into Georgian Bay, an inlet of Lake Huron. The Nipissing Indians, at the time of the French Conquest, very numerous around the lake, were a branch of the Algonquin stock (see **ALGONQUINS: INDIANS, AMERICAN**). They were driven away by the Iroquois; but a remnant live here still under protection of a Rom. Cath. mission.

NIPPERS: see under **NIP**.

NIPPLE, n. *nĭp'pl* [a dim. of *neb* or *nĭb*: Esthon. *nĭp*, point, end]: that part of the female breast from which the milk is drawn: a teat or dug (see **MAMMARY GLAND**): that part of the lock of a gun over which the percussion-cap is placed. **NIPPLED**, a *nĭppld*, covered with nipple-like protuberances. **NIP'PLY**, ad. *-plĭ*.

NIPPON, *nĭp-pŏn'* (incorrectly **NIFON**, *nĭf-ŏn'*, or **NIPHON**, *nĭf-ŏn'*): name improperly given by Europeans to the principal island of Japan, and borrowed from the Japanese name of the empire, which is *Dai Nihon* or *Nippon*. The chief island or 'mainland,' which is by far the largest part of the empire, had no separate native name till lately, but is now officially called *Honshū*, or *Hondo*. The inland sea of Suonada separates the so-called N. from the islands of Kiushū and Shikoku, and the Strait of Sangar on the n. e. from the island of Yesso. The island has an extreme length of 900 m., extreme width nearly 200 m., average width about 100 m.: area about 141,655 sq. m. Of the total pop. of Japan (1890), 40,072,020, the main island

NIRUKTA—NIRVÂNA.

contained 27,250,000. Most of the chief towns of the empire are on the island, including the capital Tokio or Yedo (q.v.): Miako or Kioto (q.v.), pop. 30,000; Osaca (q.v.), pop. 300,000; Iiogo, the outlet of its trade; Kana-gawa (q.v.) and Yokohama (q.v.), ports near Tokio; and Niigata. Of other noteworthy cities and ports, Nagasaki is in Shikoku, and Hakodate in Yesso. See JAPAN.

NIRUKTA, or 'Explanation:' Hindu name of one of the six *Vedângas* (see VEDA) which explains difficult Vedic words. That there have been several works assigned for such a task, even since a very remote period of Hindu antiquity, and that they bore the name N. is probable, for 'N. authors' are quoted either generally or by name in several Sanskrit authors; but the work emphatically called *Nirukta*, and for the present the only surviving representative of this important Vedânga, is that of Yâska, predecessor of Pânini (q.v.). His work consists of three parts—the *Naighantuka*, where, for the most part, synonymous words are taught; the *Naigama*, which contains words that occur usually in the Vedas only; and the *Daivata*, which contains words relating chiefly to deities and sacrificial acts. A Commentary on this work by the same Yâska likewise bears the name N. In the comment Vedic passages are quoted in illustration of the words to be explained, and the comment given by Yâska on these passages is the oldest instance known at present to Sanskrit philology, of a Vedic gloss. Besides the great importance which Yâska's *Nirukta* thus possesses for proper understanding of the Vedic texts, it is valuable also on account of several discussions which it raises on grammatical and other questions, and on account of the insight that it affords into the scientific and religious condition of its time—Text and Commentary of Yâska's *Nirukta* have been edited by Prof. R. Roth (Göttingen 1852).

NIRVÂNA, n. *nêr-vâ'nă* [Skr. *nîr*, out; *vâna*, blown—*lit.* that which is blown out or extinguished]: in Buddhist doctrine, term denoting the final deliverance of the soul from transmigration. It implies, consequently, the last aim of Buddhist existence, since transmigration is tantamount to a relapse into the evils or miseries of *Sansâra*, or the world. But as Hinduism, or the Brahmanical doctrine, professes to lead to the same end, the difference between *Nirvâna* and *Moksha*, *Apavarga*, or the other terms of Brahmanism designating eternal bliss, and consequent liberation from metempsychosis, rests on the difference of the ideas which both doctrines connect with the condition of the soul after that liberation. *Brahman*, according to the Brahmanical doctrine, being the existing and everlasting cause of the universe, eternal happiness is, to the Brahmanical Hindu, the absorption of the human soul into that cause whence it emanated, never to depart from it again. According to this doctrine, therefore, the liberation of the human soul from transmigration is equivalent to that state of felicity which religion and philosophy attribute to *that* Entity (see INDIA—*Religion*). As, however, the ultimate

cause of the universe, according to Buddhism, is the Void or Non-entity, the deliverance from transmigration is, to the Buddhists, the return to non-entity, or the absolute extinction of the soul. However much, then, the pious phraseology of their *oldest* works may embellish the state of N., and apparently deceive the believer on its real character, it cannot alter this fundamental idea inherent in it. We are told, for instance, that N. is quietude and identity, whereas Sansâra is turmoil and variety; that N. is freedom from all conditions of existence, whereas Sansâra is birth, disease, decrepitude and death, sin and pain, merit and demerit, virtue and vice; that N. is the shore of salvation for those who are in danger of being drowned in the sea of Sansâra; that it is the free port ready to receive those who have escaped the dungeon of existence, the medicine which cures all diseases, the water which quenches the thirst of all desires, etc.; but to the mind of the orthodox Buddhist, all these definitions convey but the one idea, that the blessings promised in the condition of N. are tantamount to the absolute 'extinction of the human soul,' *after* it has obeyed, in this life, all the injunctions of Buddhism, and become convinced of all its tenets on the nature of the world and the final destination of the soul.

Although this is the orthodox view of N., according to the oldest Buddhistic doctrine, it is necessary to point out two categories of different views which have obscured the original idea of N., and even induced some modern writers to believe that the final beatitude of the oldest Buddhistic doctrine is not equivalent to the absolute annihilation of the soul.

The first category of these latter, or, as we may call them, heterodox views, is that which confounds with N. the preparatory labor of the mind to arrive at that end, and therefore assumes that N. is the extinction of thought, or the cessation, to thought, of all difference between subject and object, virtue and vice, etc., or certain speculations on a creative cause, the conditions of the universe, and so on. All these views the Buddha himself rejects, as appears from the work *Lankâvatâra* (q.v.), where relating his discourse on the real meaning of N. before the Bodhisattwa Mahâmâti. The erroneousness of those views is obviously based on the fact that the mind, even though in a state of unconsciousness, as when ceasing to think, or when speculating, is still within the pale of existence. Thus, to obviate the mistaken notion that such a state is the real N., Buddhistic works sometimes use the term *Nirupadhis'essa Nirvâna*, or 'the Nirvâna *without* a remainder of substratum' (i.e., without a rest of existence), in contradistinction to the 'Nirvâna *with* a remainder;' meaning by the latter expression that condition of a saint which, in consequence of his bodily and mental austerities, immediately precedes his real N., but in which, nevertheless, he is still an occupant of the material world.

The second category of heterodox views on the N. is that which, though acknowledging in principle the original notion of Buddhistic salvation, represents, as it were,

a compromise with the popular mind. It belongs to a later period of Buddhism, when this religion, extending its conquests over Asia, had to encounter creeds which abhorred the idea of an absolute nihilism. This compromise coincides with the creation of a Buddhistic pantheon, and with the classification of Buddhist saints into three classes, each of which has its own N.; that of the two lower degrees consisting of a vast number of years, at the end of which, however, these saints are born again; while the absolute N. is reserved for the highest class of saints. Hence Buddhistic salvation is then spoken of, either simply as *Nirvāna*, or the lowest, or as *Parinirvāna*; the middle, or as *Mahāparinirvāna*, or the highest extinction of the soul; and as those who have not yet attained to the highest N. must live in the heavens of the two inferior classes of saints until they reappear in this world, their condition of N. is assimilated to that state of more or less material happiness which is held out also to the Brahmanical Hindu before he is completely absorbed into Brahman.

When, in its last stage, Buddhism is driven to the assumption of an Adi, or primitive, Buddha, as the creator of the universe, N., then meaning the absorption into him, ceases to have any real affinity with the original Buddhistic term. See BUDDHISM: LAMAISM.

NIS, v. *nīs* [OE. *ne is*, not is]: in *OE.*, is not.

NISAN, n. *nī'sān* [Heb.]: a month of the Jewish calendar, answering to the month of March or April.

NISBET, *nīs'bēt*, CHARLES, D.D.: 1736, Jan. 21—1804, Jan. 18, b. Haddington, Scotland. He graduated from the Univ. of Edinburgh, studied theology, and was for several years pastor of a Presb. church in Montrose. His pronounced sympathies with the colonists in the Revolution caused dissatisfaction to his people. On the establishment of Dickinson College, Carlisle, Penn., N. was called to its presidency, and was inaugurated 1785, July 4. He administered the affairs of the institution with great skill, and delivered lectures on logic, philosophy, theology, and belles-lettres. He was a profound scholar. His works were published after his death; and his *Memoir*, by Dr. Samuel Miller, appeared 1840. He died at Carlisle.

NISCEMI, *nīs-chā'mē*: town of Sicily, province of Caltanissetta, 10 m. n.e. from Terranova, on the right bank of the river Terranova. In 1790 this town was visited by an earthquake, and during seven shocks the ground gradually sank, in one place 30 ft. Fissures opened, which sent forth sulphur, petroleum, hot water, and mud. Pop. 12,110.

NISCH, or NISH, *nīsh*, or NISSA, *nīs'sā*: one of the principal towns of Servia, in the district added to the principality by the Berlin Congress 1878, 122 m. s.e. from Belgrade. It stands on the river Nissawa, branch of the Morawa. The town is ill-built; but many new houses and a well-supplied bazaar attest its present prosperity. N. has long been noted as the point of meeting of many roads, of both military and commercial importance. Its importance

NISHAPUR—NISI PRIUS.

would be greatly increased by the proposed construction of a railway from Belgrade to Constantinople and Thessalonica. In ancient times N. bore the name *Naissos*, and was a flourishing town of Upper Mœsia; in it Emperor Constantine the Great was born. It was Slavonic in the 6th c., was taken by the Tatar Bulgarians in the 8th, by the Servians again in the 12th, and by the Turks 1389. Near N., 1689, the Markgraf Louis of Baden, with 17,000 men, destroyed a Turkish army of 40,000. Pop. (1901) 24,451.

NISHAPUR, *nîsh-â-pôr'*, or NUSHAPUR: town of Persia, province of Khorassan, 53 m. w.s.w. of Meshid; in a most beautiful and fertile valley. It is surrounded by a rampart and trench, and has considerable trade in *turquoises*, which are obtained from mines in its vicinity. Pop. about 8,000

NISIBIS, *nîs'î-bîs*: capital of anc. Mygdonia, the n.e. part of Mesopotamia; in a fertile district, and important, both as a place of strength and as an emporium of the trade between the east and west. N. was a city of very great antiquity, but of its remoter history nothing is known. In the time of the Macedonio-Syrian kings, it was called also *Antiochea Mygdoniæ*. It was twice taken by the Romans (under Lucullus and Trajan), and again given up by them to the Armenians; but being a third time taken by Lucius Verus, A.D. 165, it remained the chief bulwark of the Roman empire against the Persians, till it was surrendered to them by Jovian after the death of Julian 363. The name *Nisibin* is retained by a small village in the Turkish ejalet of Diarbekr, round which are numerous remains of the ancient city.

NISI PRIUS, *nî'sî prî'ûs* [L. *nisi*, unless; *prius*, before, previously]: in *Eng. law*, a writ commencing with these words by which the sheriff is commanded to distrain the impannelled jury to appear at Westminster before the justices at a certain day in the following term, *unless* the justices come *before* that day to such a place. DECREE NISI, an order for the dissolution of a marriage, which remains imperfect six months, and is then made absolute, *unless* cause be shown then to the contrary. RULE NISI (see that title).—*Nisi Prius* in the United States denotes the system of trials of issues of fact in civil cases by a single judge sitting usually with a jury, in distinction from the hearing and determining of questions of law by a full bench, or as it is termed, by the court sitting in banco. In the one case the judge presides at the trial of some question of fact which is to be submitted to the jury generally; in the other case the judge, with two or three other judges, hears and determines questions of law which have been raised for the opinion of the court. All ordinary civil actions are heard and determined by the *nisi prius* courts. The decisions on questions of law made at *nisi prius* have not the weight and authority of the decisions made by the court in banc, because they are usually the decisions of a single judge, rendered at the spur of the moment, and without full argument by counsel.

NIT—NITRE.

NIT, n. *nīt* [AS. *knitu* ; Icel. *nitr* ; Sw. *gnet* ; Dut. *neet*, a nit—originally, that which stings: Icel. *knita*, to attack, to strike]: the egg of a louse or other like insect. **NITTY**, a. *nīt'tī*, full of nits. **NIT'TINESS**, n. *nēs*, state of being full of nits.

NITIDOUS, a. *nīt'ī-dūs* [L. *nitidūs*, shining]: in bot., having a smooth and polished surface; glossy.

NITI-GHAUT, *nē-tē-gaut*: pass of the Himalaya, between the British dist. of Kumaon and Tibet, 16,814 ft. above sea-level. It takes its name from the village of Niti, in Kumaon, 13 m. s. of the pass, lat. 30° 47' n., and long. 79° 56' e. This is regarded as the easiest pass between Kumaon and Tibet, and is consequently one of the principal channels of trade between Hindustan and Chinese Tartary. The Bhotias of Niti subsist chiefly by the carrying of goods in this trade. The articles of merchandise are conveyed on yaks, goats, and even sheep. Travellers often suffer much from difficulty of respiration on the pass of N.-G., on account of the rarefaction of the air at such an altitude.

NITRATINE, n. *nī-trā-tīn* [see **NITRE**]: the mineralogical term for nitrate of soda, or Chili saltpetre.

NITRE, n. *nī'ter* [F. *nitre*—from L. *nitrum* ; Gr. *nitron*, a mineral alkali]: saltpetre or nitrate of potash (see **NITRE**, below); a crystalline substance of the appearance of salt, extensively used in the manufacture of gunpowder.

NITRIARY, n. *nī-trī-er-ī*, an artificial bed where nitre is formed or made; a place where nitre is refined. **NITRATE**, n. *nī-trāt*, a salt formed by the union of nitric acid with a base, as *nitrate* of soda, *nitrate* of potash, etc. **NITRATED**, a. *nī-trā-tēd*, combined with nitre. **NITRIC**, a. *nī-trīk*, of or from nitre, as *nitric* acid. **NITRIC ACID**, a powerful acid composed of five parts of oxygen and two of nitrogen; aquafortis (see below). **NITRIDE**, n. *nī-trīd*, compound of the element nitrogen with a metal, also with phosphorus, silicon, or boron (see **NITROGEN**). **NITRIFEROUS**, a. *nī-trīf'er-ūs* [L. *fero*, I produce]: producing nitre. **NITRIFY** v. *nī-trī-fī*, [*fīō*, I am made]: to convert into nitre; to become nitre. **NITRIFYING**, imp. **NITRIFIED**, pp. *-fīd*.

NITRIFICATION, n. *nī-trī-fī-kā'shūn* [L. *faciō*, I make]: the process of converting into nitre. **NITRITE**, n. *nī-trīt*, a salt of nitrous acid with a base. **NITRY**, a. *nī-trī*, pertaining to nitre. **NITRATE OF SILVER**, silver dissolved in nitric acid—the crystals being fused by heat, a white substance remains, which forms the caustic employed by surgeons. **NITRATE OF SODA**, a compound of nitric acid and soda (see **NITRE**, below). **SPIRITS OF NITRE**, a very volatile substance made from one part of nitric acid to nine of alcohol, which produces great cold during evaporation.

NITRE.

NITRE, or SALTPE'TRE, as it is frequently called: the nitrate of potash or potassium nitrate (KNO_3). It occurs usually in long, colorless, striated, six-sided prisms; its taste is cooling, and very saline; it is soluble in seven times its weight of water at 60°F. and in less than one-third of its weight of boiling water, but is insoluble in alcohol. When heated to about 660°F. , it fuses without decomposition into a thin liquid, which, when cast in molds, solidifies into a white, fibrous, translucent mass, known as *sal prunelle*. At a higher temperature part of the oxygen is evolved, and potassium nitrite is formed. Owing to the facility with which N. parts with its oxygen, it is much employed as an oxidizing agent. Mixtures of N. and carbon, or of N. and sulphur, or of N., carbon, and sulphur, deflagrate with great energy on the application of heat; and if N. be thrown on glowing coals, it produces a brisk scintillation. *Touch-paper* is formed by dipping paper in a solution of N., and drying it.

N. occurs as a natural product in the E. Indies, Egypt, Persia, where it is found sometimes as an efflorescence upon the soil, and sometimes disseminated through its upper stratum. The crude salt is obtained by lixiviating the soil, and allowing the solution to crystallize. A large quantity of N. is artificially formed in many countries of Europe, by imitating the conditions under which it is naturally produced. The most essential of these conditions seems to be the presence of decaying organic matter whose nitrogen is oxidized by the action of the atmosphere into nitric acid, which combines with the bases (potash and lime) contained in the soil. 'The method employed in the artificial production of N. consists in placing animal matters, mingled with ashes and lime rubbish, in loosely aggregated heaps, exposed to the air, but sheltered from rain. The heaps are watered from time to time with urine or stable runnings; at suitable intervals, the earth is lixiviated, and the salt crystallized. Three years usually elapse before the nitre bed is washed; after this interval, one cubic ft. of the debris should yield between four and five ounces of N. As there is always a considerable quantity of the nitrates of lime and magnesia present, which will not crystallize, carbonate of potash, in the shape of wood-ashes, is added so long as any precipitate occurs. The nitrate of lime is decomposed, and the insoluble carbonate of lime separated:

Carbonate of Potash. Nitrate of Lime. Carbonate of Lime. Nitrate of Potash
 $\text{K}_2\text{CO}_3 + \text{Ca}(\text{NO}_3)_2 = \text{CaCO}_3 + 2\text{KNO}_3$

The clear liquor is then evaporated and crystallized. It has been found that the earth in which N. has once been formed furnishes fresh N. more readily than on the first occasion. Care is taken that the *nitre plantations*, as they are termed, shall rest upon an impervious flooring of clay, so that the liquid which drains away from them may be collected and preserved.'—Miller's *Elements of Chemistry*, 2d ed. vol. ii. p. 359.

N. does not occur in any living members of the animal kingdom, but it is found in the juices of various plants,

NITRE.

e.g., the sunflower, nettle, goose-foot, borage, tobacco, barley, etc.

All the N. used in Britain is brought from the E. Indies. The common varieties, which have dirty yellowish appearance, are termed *rough* or *crude saltpetre*, while the purer kinds are called *East India refined*. The purification or refining of N. is effected by dissolving it in water, boiling the solution, removing the scum, straining it while hot, and setting it aside to crystallize. The most common impurities are sulphate of potash, chlorides of sodium and potassium and nitrate of lime. Chloride of barium will reveal the first of these impurities, nitrate of silver the second, and oxalate of ammonia the third.

N. is employed in the manufacture of sulphuric acid, in the preparation of nitric acid, as an oxidizing agent in numerous chemical processes, as an ingredient of fireworks, and especially in the manufacture of gunpowder. It is used extensively in medicine. In moderate doses (ten grains to a scruple) it acts as a refrigerant, diuretic, and diaphoretic; hence its use is indicated when we wish to diminish abnormal heat, and to reduce the action of the pulse, as in febrile disorders and hemorrhages. In acute rheumatism, it is given in large doses with great benefit. Some physicians prescribe as much as one, two, or three ounces, largely diluted with water, to be given in the course of 20 hours; but as in several cases a single ounce has proved fatal in a few hours, such large doses should be suspected, and their effects cautiously watched. N. is a popular remedy in sore throat, either in the form of N. balls, or powdered and mixed with white sugar. In either case, the remedy should be retained in the mouth till it melts, and the saliva impregnated with it gently swallowed. The inhalation of the fumes produced by the ignition of *touch-paper* often gives speedy relief in spasmodic asthma.

Nitrate of potash is sometimes called *Prismatic Nitre* or *Potash Saltpetre*, to distinguish it from nitrate of soda, which is known in commerce as *Cubic Nitre* or *Soda Saltpetre*.

Cubic Nitre, or *Nitrate of Soda* (NaNO_3), occurs abundantly on the surface of the soil in Chili and Peru. It derives its name from its crystallizing in cube-like rhombohedrons. In most of its properties it resembles ordinary N., but in consequence of its greater deliquescence, it cannot be substituted for that salt in preparation of gunpowder. N. is used in the production of potassium nitrate from a potassium salt by double decomposition. Being considerably cheaper than the potash-salt, cubic N. is often substituted for it in the manufacture of nitric and sulphuric acids; and it is used in agriculture as a fertilizer. This application is very extensive abroad and now is rapidly spreading in the United States.

NITRIC ACID.

NITRIC ACID (HNO_3): most important derivative of the five compounds which oxygen forms with Nitrogen (q.v.). Until 1849, it was known only in the hydrated form (the *aqua fortis* of the older chemists), but in that year Deville showed that *Nitric Anhydride* (N_2O_5), might be obtained in transparent colorless crystals by the action of perfectly dry chlorine gas on well-dried crystals of nitrate of silver, the reaction being exhibited in the equation:

Nitrate of Silver. Chlorine. Chloride of Silver. Nitric Anhydride. Oxygen.



It is a very unstable compound, and sometimes explodes spontaneously. It dissolves in water with evolution of much heat, and forms nitric acid.

Nitric Acid (symb. HNO_3 , equiv. 63, sp. gr. 1.521), when perfectly pure, is a colorless, limpid, fuming, powerfully caustic fluid, possessing intensely acid reaction. It boils at 104°F. , and freezes at about -40°F. It parts very readily with a portion of its oxygen to most of the metals, and hence is much used in the laboratory as an oxidizing agent. Its mode of action on the metals requires a few remarks. In order that a metal should unite with N. A., or any other acid, it is necessary that it should represent displaced or directly replace hydrogen. This generally involves oxidation, which is effected at the same time that the metal and N. A. are brought in contact, by one portion of the latter becoming decomposed and converting the metal into an oxide, while the remaining portion combines with the oxide thus formed, to produce a nitrate. The exact nature of the decomposition varies in the case of different metals.

N. A., whether in the concentrated or in a more dilute form, acts energetically on organic matters; e.g., in decolorizing indigo; in staining the skin and all albuminous tissues of a bright-yellow color; in coagulating fluid albumen; and in converting many organic substances into nitrated compounds, often explosive, such as gun-cotton. See GUN-COTTON.

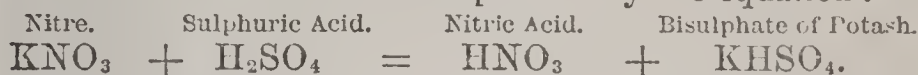
The monohydrated acid (HNO_3) is not at all a stable compound. If it be exposed to the action of light it is gradually decomposed into N. tetroxide (N_2O_4) (the peroxide of nitrogen of Graham) and oxygen; and mere distillation produces to some extent a similar effect. When it is mixed with water it emits a sensible amount of heat, owing to its affinity for water; it is found that a weaker acid when heated parts with its water, and a stronger acid with its acid, till each arrives at the density of 1.414.

The so called *Fuming Nitric Acid* is merely a mixture of the pure acid with hyponitric acid.

N. A. does not occur naturally in a free state; but is found moderately abundant in combination with potash, soda, lime, and magnesia; and after thunderstorms traces of it, in combination with ammonia, are found in rain-water. It may be formed in small quantity by passing a series of electric sparks through a mixture of its component gases in the presence of water, which is a mere imitation, on a small scale, of the mode in which it is produced in the atmosphere.

NITRIC ACID.

by a storm. It is usually prepared in the laboratory by the application of heat to a mixture of equal weights of powdered N. (potassium nitrate) and oil of vitriol (sulphuric acid) placed in a retort. Potassium sulphate remains in the retort, while the N. A. distils over, and is condensed in the receiver, which is kept cool by the application of a wet cloth or otherwise. The reaction is explained by the equation :



During distillation red fumes appear, arising from the decomposition of a portion of the N. A. and a formation of some of the lower oxides of nitrogen. In this operation *two* equivalents of oil of vitriol are taken for *one* of nitre, these being the proportions found by experience most suitable. If they are taken, equivalent for equivalent, a very impure red fuming acid is the result. In the manufacture of N. A. on the large scale, the glass retort is replaced by a cast iron cylinder coated with fire-clay, and the receiver by a series of earthen condensing vessels connected by tubes ; and sodium nitrate, found native in Peru, is substituted for nitre, in consequence of its being a cheaper salt, and of its containing 9 per cent more nitric acid.

N. A. combines with bases to form *nitrates*, some of which, as those of potash, soda, oxide of ammonium, silver, etc., are anhydrous, while others combine with a certain number (often six) equivalents of water of crystallization. Most of them are soluble in water, crystallizable, and readily fusible by heat ; and at an elevated temperature they all are decomposed, usually leaving only the oxide of the metal.

The tests for this acid when it is present in small quantities are less satisfactory than those for the other ordinary mineral acids. All its compounds are so soluble that no *precipitant* for this acid is known. The best method for its detection is mixing the fluid to be tested with a little concentrated sulphuric acid, and then pouring a strong solution of protosulphate of iron upon it, so as to form a separate layer. If much N. A. be present, a black color is produced ; if only a small quantity is present, the liquid becomes reddish-brown or purple ; the dark color being due to the formation of nitric oxide by the deoxidizing action of a portion of the iron salt on the nitric acid. — The liquids should be kept unmixed when the color appears at the line of separation in the appearance of a colored ring.

The applications of this acid in the arts, in manufactures, and in chemical processes are very extensive.

MEDICINAL USES OF NITRIC ACID.—In the British and U. S. pharmacopœias there is both a strong and a dilute acid. The strong acid of the U. S. pharmacopœia has a specific gravity of 1.42, while the diluted acid is prepared by mixing one part of the former with 6 of distilled water, and has a specific gravity of 1.059. Formerly the British pharmacopœia called for a specific gravity of 1.5 for undiluted acid. This has been abandoned for the lower strength (sp. gr. 1.42), but the British dilute acid has still its old strength (sp. gr. 1.101).

The dilute acid is used internally as a tonic in conjunction

NITRILE—NITRO.

with bitter infusions. In many cases of chronic inflammation of the liver, and in syphilitic cases in which the employment of mercurials is inadmissible, it may be prescribed with great benefit, either alone or in conjunction with hydrochloric acid, externally as a bath or lotion, or internally in doses of about 20 minims properly diluted. The strong acid is useful as an escharotic; as to destroy warts, some kinds of polypi, the unhealthy tissue in sloughing ulcers, etc., and as an application to parts bitten by rabid or venomous animals. Largely diluted, as 50 or 60 drops of the strong acid to a pint or more of water, it forms an excellent stimulative application to torpid ulcers.

NITRILE, n. *nī'tril* [Gr. *nitron*, a mineral alkali: L. *nitrum*; *olĕum*, oil]: in *chem.*, an isometric form of an alcoholic cyanide; a hydrocyanic ether.

NITRION, n. *nī'tri-ŏn* [formed from *nitrogen* and *oxygen*]: in *chem.*, the salt radical of the nitrates.

NITRO-, *nī'trō-* [L. *nitrum* (see **NITRE**)]: common prefix in chemical terms—meaning, formed by or combined with nitric acid. **NITRO-BARITE**, n. *-bār'it* [NL. *barium*, barium]: native barium nitrate. **NITRO-BENZENE**, *bĕn'zēn* or *bĕn-zēn'*, same as **NITRO-BENZOL** (q v.). **NITRO-BENZOL**, n. *-bĕn'zōl*, artificial oil of bitter almonds (see below). **NITRO-CALCITE**, n. *-kāl'sīt* [L. *calx*, lime]: nitrate of lime, having a grayish-white color, occurring in efflorescences on old walls, and in limestone caves, especially where there exists decaying animal matter. **NITRO-CELLULOSE**, n. *-sĕl ū-lōs*, compound of cellulose and nitric acid; gun-cotton; collodion. **NITRO-CHLOROFORM**, n. *-klō rō-fawrm* (CNO_2Cl_3), colorless liquid, very pungent, prepared by action of nitric acid on chloral; called also *chloropicrin*. **NITRO-GELATIN**, n. *-jĕl'a tĭn*, mixture of nitro-glycerine with gun-cotton and camphor; a high explosive. At ordinary temperatures it is a transparent jelly. **NITRO-GLYCERINE**: see below.

NITRO-BENZOL.

NITRO-BENZOL, or NITRO-BENZIDE ($C_6H_5NO_2$): yellow oily fluid, of specific gravity 1.2, which may be distilled without decomposition, crystallizes in needles at 37° , and boils at 315° . It has a sweet taste, is insoluble in water, but dissolves freely in alcohol and ether, and its odor is very similar to that of oil of bitter almonds. It is obtained by treating benzol (C_6H_6) with warm fuming nitric acid, when 1 equivalent of the hydrogen is replaced by 1 of the radical NO_2 , so that the benzol (C_6H_6) becomes converted into nitro-benzol ($C_6H_5NO_2$).

This substance has recently taken a prominent place among the narcotic poisons. Under the name *Essence of Mirbane* or artificial oil of bitter almonds, it is largely used, as a substitute, for oil of bitter almonds in perfumery and confectionery, giving to confectionery the smell, but not the agreeable taste of that oil. It is a pale, lemon-colored liquid, with pungent, disagreeable taste, and distinguishable by its odor from all other liquids, except oil of bitter almonds, from which it differs in the following reaction: Pour a few drops of each on a plate, and add a drop of strong sulphuric acid. The oil of almonds acquires a rich crimson color with a yellow border, while the nitro-benzol produces no such color. In 1859, Prof. Casper of Berlin published an account of this liquid under the name 'A New Poison,' and described its effects on dogs and rabbits. In 1862, and since that date, various cases of human poisoning have been published in more than one country. Of three cases here referred to, in two the patient died, after swallowing a portion of the fluid; while in the other, the inhalation of the vapor proved fatal. A boy, aged 17, while drawing off some N.-B. by a siphon, swallowed a portion of the liquid. There were no immediate symptoms; but he soon felt sleepy, and at dinner, two or three hours later, ate but little and said that he felt as if drunk. He fell into a stupor, which became deeper and deeper, until he died without vomiting or convulsions, 12 hours after the ingestion of the poison. In the case of a man, aged 43, who spilled a quantity of N.-B. over his clothes, and went about for several hours breathing the vapor, the effects were nearly the same. These cases are described by Dr. Letheby in *Proceedings of the Royal Soc.*, 1863. In each, the progress was much the same as that of slow intoxication, except that the mind was perfectly clear until the fatal stupor, sudden as in apoplexy, with no return of consciousness or bodily power; the sleep deepened into death without a struggle. The duration of each case was nearly the same. N.-B., as well as aniline, into which it seems to have been partly converted in the body, was detected in the brain and stomach. Detection of the poison in such cases is entirely practicable, but is the work of a professed toxicologist; see *Principles and Practice of Medical Jurisprudence*, 311. The vapor of this substance, as evolved from almond glycerine soap, has seriously affected females. The remedial treatment after poisoning by this substance is essentially the same as in poisoning by opium.

NITROGEN.

NITROGEN, n. *nī'trō-jěn* [Gr. *nītron*, a mineral alkali; *gennāō*. I produce; from its being an essential constituent of nitre]: elementary body which, as a gas, composes four-fifths by bulk of our atmosphere. **NITROGENIZED**, a. *nī-trĕj ě-nīzd*, containing nitrogen as a constituent part. **NITROGENOUS**, a. *-nūs*, or **NITROGENEOUS**, a. *nī'trō-jě'ně-ūs*, pertaining to or containing nitrogen.—*Nitrogen* (symbol, N; equiv 14; sp. gr. 0.9713) is frequently termed *azote* [Gr. *a*, priv., *zoe*, life], especially by French chemists, in consequence of its being a gas incapable of supporting life through breathing; and for the same reason, German chemists term it *stickstoff* ('choking substance'). It was discovered by Rutherford 1772. Long regarded as 'a permanent' gas, it was liquefied by Cailletet 1878.

N. is a colorless, tasteless, inodorous gas, which in appearance in no way differs from atmospheric air, of which it is the main ingredient. It is somewhat lighter than atmospheric air, 100 cubic inches at 60° F. and barometer 30 inches, weighing 30.119 grains, while the same volume of air weighs 30.935 grains. It is characterized rather by negative than by positive properties. It is not combustible, nor is it a supporter of combustion (a lighted taper being immediately extinguished if immersed in this gas); it is not respirable, though it is not positively poisonous; for when it is mixed with respirable gases (as with oxygen in atmospheric air) it may be breathed without injury. It is very slightly soluble in water, and hence may be collected over that fluid. Its combining powers are very slight, and though it unites with oxygen, hydrogen, chlorine, and many other substances, the union is effected rarely by direct action of the elements on one another, but only by complicated processes, and many of the resulting compounds are exceedingly unstable.

N. is one of the most widely diffused elementary substances. It forms about four-fifths of the bulk of the atmosphere; for air, after having been freed from the small quantities of carbonic acid and aqueous vapor which it contains, consists, according to the experiments of Dumas and Boussingault of 20.81 per cent. of oxygen and 79.19 per cent. of N. by volume, or 23.01 of oxygen and 76.99 of N. by weight; the two gases in this case being uniformly mixed, but not in chemical combination with one another. It occurs, however, in combination with oxygen in the form of nitric acid (HNO_3) in various nitrates found as natural products in many parts of the globe. In combination with hydrogen, it is abundantly found as ammonia; and combined with oxygen, hydrogen, and carbon, and sometimes additionally with sulphur and phosphorus, it forms the most important constituents of the solids and fluids of the animal body, and occurs in many vegetable products, especially in the alkaloids, e.g., morphine, strychnine, and quinine.

The ordinary methods of preparing and exhibiting this gas, are based on the removal of the oxygen from atmospheric air. This may be done (1) By setting fire to a small piece of phosphorus placed in a capsule, that floats on the

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water of the pneumatic trough, and by inverting a glass receiver filled with air over it. The phosphorus combines with the oxygen of the air to form phosphoric oxide, which dissolves in the water, while the N. is left, and may be transferred to another vessel. (2) By placing a stick of phosphorus in a jar of air which is standing over water. In two or three days there will be the same results as in the former experiment—viz., phosphoric oxide and N. (3) By passing air through a tube containing heated copper filings which absorb the oxygen. In the above cases, a little carbonic acid is present, which may be removed by passing the gas through a solution of potash. Pure N. may be obtained directly by the action of chlorine gas on a solution of the nitrogenous substance, ammonia (NH_3).

N. forms with oxygen no less than five distinct compounds, containing, respectively, 1, 2, 3, 4, and 5 equivalents of oxygen, with 1 equivalent of N. These compounds are thus named and constituted: Protoxide of N. (known also as Nitrous Oxide and Laughing Gas) N_2O ; Binoxide (or Deutoxide) of N. (known also as Nitric Oxide), N_2O_2 ; Nitrogen trioxide, N_2O_3 ; Nitrogen tetroxide (known also as Peroxide of N.), N_2O_4 ; Nitrogen Pentoxide, N_2O_5 .

It will be noticed that two atoms of nitrogen are introduced into each. This is done in some cases irrespective of the specific gravity of the oxide in the gaseous state in order to avoid the anomaly of considering nitrogen a monad, dyad, triad, tetrad, and pertad. Admitting the possibility of one element thus varying in atomicity, which in this case has much in its favor, the oxides should be thus expressed, N_2O , NO , N_2O_3 , N_2O_4 , N_2O_5 . The first, third, and fifth of these oxides in combination with water form hyponitrous acid ($\text{H}_2\text{O} + \text{N}_2\text{O} = 2\text{HNO}$), nitrous acid ($\text{H}_2\text{O} + \text{N}_2\text{O}_3 = 2\text{HNO}_2$), and nitric acid ($\text{H}_2\text{O} + \text{N}_2\text{O}_5 = 2\text{HNO}_3$).

Nitrous oxide is a transparent, colorless gas, with sweetish taste and smell. It is much more soluble in cold than in hot water, and therefore should be collected over the latter. Under a pressure of 50 atmospheres at 45° it is reduced to a colorless liquid, and it may be frozen into a transparent solid at about -150° . This gas is about half as heavy again as atmospheric air, its specific gravity being 1.527. It supports the combustion of many bodies, such as carbon, sulphur, phosphorus, and iron, with a brilliancy similar to that which they exhibit in oxygen; and, like oxygen, when mixed with hydrogen, it forms a mixture which explodes on application of flame. The most remarkable property of the gas is its intoxicating power on the animal system. It may be respired for a short time if quite pure, or if mixed with only atmospheric air, without danger or serious inconvenience. The intoxication is frequently accompanied with an irresistible propensity to muscular exertion, and usually with uncontrollable bursts of laughter; hence the gas has received the name *laughing gas*. It is best obtained by heating solid nitrate of ammonia in a glass retort, when it is converted into protoxide of N. and water. It has recently come into frequent use as an anæsthetic in dentistry and

similar cases. It is less suited to protracted operations, as the effects are transient. It produces much less disturbance of the system than chloroform, though in some rare cases, or states of the system, its use is deemed injurious.

Binoxide of Nitrogen is a colorless gas, very slightly soluble in water, and having a specific gravity of 1.039. Its taste and smell (if any) are unknown, since, in the presence of atmospheric air, it instantly becomes more highly oxidized, and forms yellowish-red fumes of nitrogen tetroxide. It is of little importance.

Nitrogen trioxide is a substance of which, in its uncombined state, very little is known further than that it is a dark-blue, very volatile fluid, which boils at 32° , and is then converted into an orange-red gas.

Nitrogen tetroxide presents a remarkable example of a body within comparatively small limits of temperature occurring in a solid, a fluid, and a gaseous form. At a temperature of -4° it occurs in the form of colorless prismatic crystals, which are converted at about 9 degrees into a fluid which, till the temperature reaches about 30° , is colorless; but at a higher temperature becomes yellow and orange, and at about 82° boils, and is converted into brownish-red vapor. It is chiefly the vapor of hyponitric acid that forms the orange fumes produced when binoxide of N. comes in contact with the air. It possesses a very disagreeable suffocating odor, and a caustic action; and colors the skin yellow, like nitric acid. It does not enter into combination with bases, but is immediately decomposed by them into nitric and nitrous acid radicals.

Nitric Acid see that title.

N. combines with hydrogen in four proportions, but none of these compounds can be formed by the direct union of the component elements, and only one, ammonia, has been obtained in the isolated form. They are—*Imidogen* (NH), *Amidogen* (NH_2), *Ammonia* (NH_3), and *Ammonium* (NH_4). For the first two, see ORGANIC BASES: for the last two see AMMONIA.

N. combines with chlorine, bromine, and iodine. The *chloride of nitrogen* is a heavy, oily, orange colored fluid, insoluble in water, and evolving a vapor higher irritating. It is one of the most dangerous compounds known in chemistry, as it explodes with extreme violence when brought in contact with phosphorus, arsenic, potash, ammonia, caoutchouc, numerous oily matters, etc., at ordinary temperatures, and spontaneously when heated to above 200° . It has occasioned many serious accidents; details regarding its mode of preparation are omitted here. Its exact formula is unknown. *Bromide of Nitrogen* is an oily-looking detonating liquid, resembling the chloride in appearance and properties. *Iodide of Nitrogen* occurs as a black powder, which when dry explodes at the slightest touch, often without any assignable cause.

N enters into combination with various metals, as mercury, copper, titanium, molybdenum, and vanadium, forming a class of compounds to which the term *Nitrides* is applied. Their most marked characteristic is, that, like the

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preceding set of compounds, they are highly explosive, resolving themselves when struck, or at a high temperature, into their constituent elements.

N. is absolutely essential to plant life and growth. It forms one of the principal and most costly elements of commercial fertilizers (see FERTILIZERS), and in soils long under cultivation is very likely to be deficient in quantity. Concerning the sources whence it is obtained by certain plants there has been much mystery. Experience has proved that the growth and yield of wheat and other cereals which contain only a moderate quantity of N. are greatly increased by the use of nitrogenous manures, while clover alfalfa, and other leguminous crops, though using large quantities of N., do not show such marked benefit from the application of these fertilizers, and thrive with the application of less than the cereals require. It has been conclusively shown also that though leguminous crops remove considerable quantities of N. from the land, they leave the surface soil richer in that element than it was before they were produced. Only two sources of this surplus N. are possible—the subsoil and the atmosphere. For a long period many farmers have claimed that both these sources were drawn upon, while scientists have declared that the N. not furnished by the rainfall or by fertilizers, or not already existing in the soil must come only from the subsoil. During several years past Prof. Hellriegel, of Germany, has been conducting a series of elaborate experiments which seem to make it absolutely certain that leguminous crops obtain much of their N. from the air. Sir J. B. Lawes, who long opposed the theory that plants could use free N., has repeated the tests at his famous experimental estate, Rothamsted, England, with results, as far as secured, corroborating those obtained by the German chemist. It is supposed that the N. is made available for the use of crops largely through the action of microbes.

NITRO-GLYCERINE.

NITRO-GLYCERINE, *nī trō-glīs'ér-ĭn* [$C_3H_5(NO_2)_3O_3$], known also as *Glonoïn* or *Glonoïn Oil*: compound produced by the action of a mixture of strong nitric and sulphuric acids on glycerine at low temperatures. (See GLYCERINE.) For details of two methods of preparing it, see Watts's *Dictionary of Chemistry*, II. 890, 891. According to whatever method it is obtained as a light yellow oily liquid, of specific gravity varying from 1.525 to 1.6, inodorous, but having sweet pungent aromatic taste; a single drop, however, placed on the back of the tongue, produces headache and pain in the back for many hours. It is only slightly soluble in water, but dissolves readily in ether, alcohol, and methylated spirits. This substance was discovered 1847 by Sobrero, then a student in the laboratory of Pelouze in Paris, and afterward prof. in Turin. But though its discoverer ascertained its remarkable properties as an explosive, it remained an object of merely scientific interest till 1864, when it began to be manufactured on a large scale for blasting purposes by Nobel, a Swede resident in Hamburg. If ignited in the open air, N.-G. burns rapidly with a brisk flame without any explosion: if poured out in a thin sheet, it ignites with difficulty, and burns incompletely. But it explodes at once under a moderately strong blow or concussion, under the concussion due to the explosion of gunpowder, in contact with red-hot iron, and especially under the action of detonating mixtures and fulminates; it explodes likewise in a high temperature (see below); the explosion, however produced, being in all cases excessively rapid, and unaccompanied by smoke. According to Dr. Rudolf Wagner, distinguished Bavarian technologist, it may be cooled down to 4° without becoming solid; but this statement probably refers to the chemically pure compound; for the N.-G. of commerce, patented by the first maker, under the name *Nobel's Patent Blasting Oil*, becomes solid if exposed for a considerable time to a temperature of 46° , crystallizing in long needles, which are most dangerous to handle, since they explode, even on being gently broken, with appalling violence. At 320° , N.-G. begins (according to Dr. Adriani) to decompose, giving off red vapors: and if the heat be suddenly applied, or raised slightly above this point, the substance explodes with great violence; while, according to other observers, it is liable to explode at 240° or a little higher; and if exposed for a length of time to half that temperature, explosion may take place at 180° or less. It is obvious from the formula for N.-G. that it may be assumed to consist of glycerine $C_3H_5O_3$ in which three atoms of hydrogen are replaced by three of peroxide of nitrogen, NO_2 . The products of the complete combustion of 100 parts of pure N.-G. are—water, 20 parts; carbonic acid, 58; oxygen, 3.5; nitrogen, 18.5; hence, it has been calculated that one volume (say, a cubic inch) of this compound, at a specific gravity of 1.6, yields, on combustion or explosion:

Aqueous vapour, . . .	554	volumes (say, cubic inches)
Carbonic acid, . . .	469	" "
Oxygen,	39	" "
Nitrogen,	286	" "
	<hr/> 1293	" "

NITRO-GLYCERINE.

According to Nobel, these gases expand, on explosion, to 8 times their bulk; in which case, one cubic measure (say, 1 cubic inch) of N.-G. will yield 10,384 cubic measures (say, cubic inches) of gases: while 1 cubic measure of gunpowder will yield only 800 cubic measures of gases. Hence, for equal bulks, N.-G. is 13 times as strong as gunpowder, while for equal weights it is 8 times as strong. This is, however, only a general statement. Its explosion is so rapid as to be much more local in its effects than that of gunpowder, and it may produce a far more intense action than above stated within a limited zone.

The danger of using this compound in mining, etc., is greatly increased by its instability. Even when pure, it is liable, at a heat of 70° or less, to undergo slow, spontaneous decomposition into glycerine, oxalic and hydrocyanic acids, ammonia, etc., with a continuous escape of gaseous products, which, exerting pressure on the liquid, renders it so prone to explosion that even a slight concussion is attended with danger; and the impure commercial compound decomposes far more rapidly than the pure N.-G.: indeed, impure N.-G. may, from this cause, be regarded as dangerously self explosive even while standing quietly.

Public attention was called to the dangerous qualities of the new compound, by a terrific explosion on the ship *European*, in harbor at Colon, Panama, 1866, April 3. Among the cargo put on board at Liverpool were 70 cases of nitro-glycerine, and one case containing 70,000 percussion-caps. At 7 A. M. on the 3d, a most tremendous explosion occurred in the after-part of the ship. It was described as most rapid, without smoke, but with a great flame, and the ship was immediately seen to be on fire. The whole of the deck and cabin aft were carried away, and the side of the ship also was much damaged, the plates above the water-line being blown away, and the parts below it much injured. For fear of further explosions, the ship was towed into the bay, where she shortly sank. The injury was not confined to the *European*; the jetty was nearly blown away, houses in the town were partially destroyed, and altogether about 50 lives were lost. The conclusion was irresistible that the explosion was due to the N. G. This compound was largely used, first in the blasting necessary for the construction of the summit tunnel on the Central Pacific railway: it is said (*Chemical News*, 1867, Aug. 16), that the operation was 25 per cent. faster than if gunpowder had been used—the small holes being drilled in less than one third the time required for the large holes for gunpowder, while the oil has a strength, against hard work, five times greater. No accident occurred from the use of this compound—then called 'nitrolecum' in the official report.

Both N.-G. and dynamite (see below) are now extensively used in mining and similar operations. A peculiar characteristic adapts them for all such purposes. When N.-G. or dynamite, or any other compound having N.-G. for its basis is exploded, unlike gunpowder or the majority of other explosives, its force is expended in the direction of

NITRO-GLYCERINE.

those points in actual contact with the compound. Thus, if gunpowder were exploded on an iron plate in the open air, the disruptive effects would be nil; but if N.-G. or dynamite were exploded in the same position, the effects would be the indenting or shattering of the iron plate *downward*. In the same way, an ordinary gun fired with N.-G. would almost certainly burst, even though the quantity used were no greater than the ordinary charge of gunpowder. This characteristic of the nitro-compounds renders unnecessary the tedious process in blasting known to miners as 'tamping'—the filling up of the hole bored in the rock after gunpowder has been introduced, so as to produce as much resistance as possible to the disruptive force of the gunpowder. the hole is filled with pieces of rock, sand, clay, and the like, and the whole beaten firmly together. With N.-G. or dynamite, simple contact with the bottom and sides of the bore-hole suffices for the maximum disruptive effects. The mode of firing the compounds is exceedingly simple. They are introduced into the blast holes in suitable cases; and a fuse, having a small charge of gunpowder at its extremity, is fixed immediately on the top of the compound, and the concussion produced by the exploding gunpowder explodes the nitro-compound. The ordinary fuse or the 'straw' used in some blasting operations would be uncertain in its results, owing to the non explosibility of the compounds under the application of open flame.

The law sets strict regulations on the manufacture, sale, storing, and transport of all the explosives named, as well as the numerous compounds which they are made to form when mixed with each other. No govt. regulation, however, can secure freedom from carelessness, and carelessness is one of the principal causes of the majority of accidents. Let it be remembered that friction or concussion is in all these compounds to be avoided, and that the great majority of explosives are rendered harmless if placed in water. As has been said, N.-G. is exploded by percussion, and apparently, under ordinary circumstances, by nothing else—neither by friction or fire. Generally, a trifling blow is sufficient to explode it. Its explosive force is about ten times that of gunpowder. It has all the appearance of common oil, and is usually carried in tin cases, each of which holds 25 lbs. Each can is packed in a wooden case for carriage. In a paper on this subject by M. Kopp, that chemist advocates the view that accidents are due mainly to the presence of impurities. He states that, by means of charges of 1,500 or 2,000 grammes of oil, from 40 to 80 cubic metres of a hard rock may be detached.

Richter's observations on the slight inflammability of this compound are noted above; some other of the chief results of his recent experiments are here adduced. The shaft in which the experiments were made was being sunk 30 ft. long by 8 ft. wide, in hard gray gneiss with occasional joints, which facilitated the working. From these experiments, it appeared not only that its power was four or five times greater than that of the nitrate-of-soda gunpowder

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used for mining in Germany, but that other advantages from its use were as follows: (1) Fewer men are needed for working out a certain-sized piece of ground, and fewer holes have to be bored. (2) N.-G. does not take fire easily (see above). (3) The amount of smoke after a blast is small, as compared with that of powder; and workmen can return at once to the spot. (4) Holes that have missed, or only partly torn, can be retamped and shot off, which, with the former arrangements, is impossible, or very dangerous. Against these advantages must be set off the following disadvantages: (1) The gases formed during the explosion of N.-G. have injurious effect on the organs of sight and respiration. (2) N.-G. explodes on being struck smartly, and easily freezes. (3) The masses of rock which it removes are mostly very large, and considerable time is requisite in breaking them up.

Fenian or other irreconcilable Irish emissaries were at one time sent from America to England to effect the deliberate destruction of English public buildings; and partially successful attempts were made in London and elsewhere. Careful investigation proved the destructive agent, in all cases, to have been one of the nitro-compounds; and led to the discovery at Birmingham of a N.-G. manufactory in a back shon, where this explosive was being made on a large scale—evidently for blowing up public buildings.

DYNAMITE, called by the miners of Colorado and Nevada 'Giant Powder,' has of late years superseded the N.-G. which is its principal component. Induced by the calamitous and inexplicable accidents so frequent with N.-G., and which it seemed impossible to guard against, Nobel sought by soaking various inert substances with N.-G. to obtain some composition which should have the valuable powers of the explosive oil without its deadly risks. In 1867 he gave the name *dynamite* to the successful outcome of his experiments. Dynamite, as generally manufactured, consists of infusorial earth, porcelain earth, coal dust, siliceous ashes or the like, saturated with about three times its weight of N.-G.—though the proportion varies with different makers. According to its elements, it is to the eye a grayish-brown, reddish, or blackish powder, damp and greasy to the touch, and without smell. In the open air it burns quietly, and gives off fumes of carbonic acid and nitrogen with watery vapor. If properly made, it ought not to be exploded by heat below 212° , by a spark, or by any ordinary shock; though cases are said to have occurred where one of these causes singly has sufficed. To take advantage of its enormous blasting power, it is rather tightly packed in paper or parchment cartridges, and exploded by means of a fulminating fuse or cap. It leaves a white ash, with little or no smoke. In the hands of careful workmen who know what they are about, its use is comparatively free of danger, and it may be easily transported. It is now regarded as one of the safest of explosives, though undeniably its manufacture is still attended with great risks. Over gunpowder it has the advantage that it is not injured by damp; it also saves labor, fewer and smaller holes suf-

NITRO-MAGNESITE—NITROUS ETHER.

ficing in blasting operations. It costs about four times as much as gunpowder, but performs eight or ten times as much work. The violence and rapidity of its explosion have hindered its use in firearms.

Various other N.-G. powders or compounds have been patented. *Dualline* is said to consist of wood gunpowder soaked with the oil; or of N.-G., fine sawdust, and a little nitre. The improved *lithofracteur* contains 52 parts of N.-G., 30 of silex, 12 of coal dust, and 2 of sulphur. *Colonia powder*, *fulminatine*, *lignose*, *sebastine*, *heracline*, all are names for compositions in which N.-G. is the chief ingredient, and all are more or less valuable as explosives.

NITRO-MAGNESITE, n. *nī-trō-măg'ně-sīt* [Gr. *nitron*, a mineral alkali, and *Magnesia*, in Asia Minor]: nitrate of magnesia, a saline efflorescence closely resembling nitrate of lime.

NITROMETER, n. *nī-trōm'ě-tér* [Gr. *nitron*, a mineral alkali; *metron*, a measure]: an instrument for testing the quality or value of nitre.

NITRO-MURIATIC ACID, *nī-trō-mū-rĭ-ăt'ĭk ăś'ĭd*: mixture of nitric and hydrochloric acids. It has the power of dissolving gold; hence was termed *aqua regia* by the alchemists. It dissolves platinum also. Its solvent power depends on the liberation of chlorine in what is called the nascent state. Chloride of the metal is formed also of nitrosyl (NO). The mixed acids must be strong; if dilute, must be heated. The colorless fuming mixture soon becomes an orange yellow, from the liberation of chlorine. It destroys organic matter, and is used in investigating poisons. An impure N.-M. acid can be produced by sodium nitrate or chloride in place of the corresponding acid.

NITROUS, a. *nī-trūs* [from NITRE, which see]: resembling or obtained from nitre; impregnated with nitrous acid. **NITROUS ACID**, a compound of nitrogen and oxygen, with less oxygen than nitric acid (see NITROGEN). **NITROUS OXIDE**, the gas known by the name of laughing-gas (see NITROGEN, Protoxide). **NITRY**, see under NITRE.

NITROUS ETHER, *nī-trūs ẽ-thér*, or **NITRITE OF OXIDE OF ETHYL**, represented by the formula $C_2H_5NO_2$: pale yellow fluid, having a specific gravity of 0.947, and evolving an agreeable odor of apples. On evaporation, it produces a great degree of cold, it boils at 62° F., and it is very inflammable. It does not mix with water, but is readily miscible with alcohol. When kept in contact with water it soon decomposes; and an acid mixture of a very complicated character is formed. N. E. may be obtained by mixing 1 part of starch and 10 of nitric acid in a capacious retort, gently heated. The vapor of nitrous acid, evolved by the action of the starch on the nitric acid, is conducted into alcohol, mixed with half its weight of water contained in a two necked bottle, which is to be plunged into cold water. The second neck of this bottle is connected with a good cooling apparatus; and the vapor combining in its passage through the alcohol with the oxide of ethyl, forms N. E. which distils in a continuous stream. This, known

as Liebig's method, is the best; but N. E. is prepared usually by the direct action of nitric acid on alcohol, in which case the nitric acid is deoxidized by the hydrogen and carbon of the ethyl of part of the alcohol.

The *Spirit of Nitrous Ether*, or *Sweet Spirit of Nitre*, used in medicine, is a mixture of nitrous ether with about four times its volume of rectified spirit, mixed with some aldehyde and other impurities. Its specific gravity should not exceed 0.85. It is used, in conjunction with other medicines, as a diuretic, especially in the dropsy which follows scarlatina; and it is employed, in combination with acetate of ammonia and tartarized antimony, in febrile affections. The dose in febrile cases is from half a drachm to a couple of drachms, and if it is to act as a diuretic, two or three drachms should be given. Being a rather expensive medicine, it is liable to adulteration. In the new British Pharmacopœia, it is recommended that this substance should be directly obtained by the distillation of nitrite of soda (five ounces), sulphuric acid (four fluid ounces), and rectified spirit (two pints)—a process open to many practical objections.

NITTER, n. *nīt'tér* [from NIT, which see]: the horse louse or fly which deposits nits on horses.

NITZSCH, *nītsh*, KARL IMMANUEL: German theologian: 1787, Sep. 21—1868, Aug. 21; b. Borna, Saxony; son of Karl Ludwig N., pastor and afterward professor. He studied for the clerical profession at Wittenberg, where he took his degree 1810, and where, 1813, he became parish minister. Here his religious opinions underwent great modification through the influence of Schleiermacher and Daub, and he awoke to a clearer perception of the essence of religion. From this time forward N. is to be regarded as one of that new school—of which Neander is the greatest representative—who endeavored to reconcile faith and science, not by forced and unnatural compromise, but by pointing out their distinctive spheres, and by exhibiting in their own spiritual life that union of reason and reverence for which they argued in their writings. In 1822, N. was called to Bonn as ordinary prof. of theology and university preacher: there he labored with great diligence more than 20 years, not only in theology, but in all matters affecting the welfare of the Prussian church. In 1847, he succeeded Marheineke at Berlin, and as prof., university preacher, and upper consistorial counselor, he exercised with prudence and moderation a wide ecclesiastical influence. In his political (perhaps also in his religious) views he may be classed with Chevalier Bunsen. The High Lutheran party having denounced liberal politics as irreligious, N. and Bunsen and others have vindicated them on the ground of Christianity, not without success. In theology, N.'s position as protesting against the frequent usurpation by dogma of the supreme place in Christianity, is indicated by his subordination of dogma to ethics, or rather by his belief that the only dogmas which can maintain themselves permanently are those that result from an ethical apprehension of Christianity.

NIVELLES—NIZAM.

Besides numerous smaller treatises on Dogmatics, the History of Dogmas and Liturgies, three larger works call for special mention. These are *System der Christlichen Lehre* (Bonn 1829); 6th edit. (1851); *Praktische Theologie* (Bonn 1847-8); and *Predigten*, or Sermons, of which several collections have appeared, remarkable for richness of thought. —His brother GREGOR WILHELM N. (1790-1861), acquired high reputation as a philologist, and was prof. of archeology at Leipzig. He was considered one of the ablest opponents of Wolf's Homeric theories. His chief work is *Die Sagenpoesie der Griechen* (Brunswick 1852).

NIVELLES, *nē-v'ł* (Flem. *Nyvel*): town of Belgium, province of Brabant, 18 m. s. of Brussels. It has a fine church, the Church of St. Gertrude (in Romanesque architecture, A.D. 1048), which claims to contain in a shrine over the high altar the relics of St. Gertrude, daughter of Pepin, Maire du Palais. N. has manufactures of linen, cotton, lace, etc. Pop. (1890) 10,642.

NIVEOUS, a. *nīv'ě-ūs* [L. *nivēus*, white as snow—from *nix*, snow]: snowy; resembling snow.

NIVERNAIS, *nē-vēr-nā'*: formerly a province in central France, corresponding nearly to the present dept. of Nièvre. It was divided into eight territorial districts, and its towns had municipal privileges at a very early period. The principal landowners were the counts, afterward dukes, of Nevers, who held under their vassalage more than 1,800 fiefs.

NIVOSE, *nē-vōs'* [F. snowy: Latin, *nivosus*—from *nix*, snow]: name adopted, 1793, Oct., by the French Convention for the fourth month of the republican year; beginning Dec. 21, the first winter month.

NIX, *nīks*, fem. NIXE [OHG. *nihhus*; Anglo-Saxon, *nicor*; Dutch, *nikker*; Old Norse, *nikr*; Swed. *näk*, *nek*; Dan. *nøt*, *nok*—whence our name for the devil, *Nick*, not as some absurdly suppose, from *Nicholas Machiavelli*]: common name for all water spirits in the Teutonic mythology. They are represented as of human form, sometimes passing into that of a fish or of a horse. They love music and dances, and possess the gift of prophecy, like the Greek Muses, Sirens, and other water gods. The nix taught, in return for a good gift, the art of playing on a stringed instrument; and often in the evening sunshine the nixes, combing their long hair, were wont to mingle in the dances of mortals; but their company was dangerous, for though sometimes wearing a mild appearance, they were more frequently cruel and malignant.—The *water-kelnie* of Scotland must be reckoned a member of the genus Nix, but in him the evil element alone exists. He generally, if not always, assumed the form of a water-horse; frequented fords and ferries, especially during storms; allured travellers to mount him and then dashed furiously with them into the stream which he had flooded by his devilish power, and submerged them.

NIZAM, n. *nī-zām'*: the title of one of the native sovereigns of India—principal Mohammedan ruler in India.

NIZAM'S DOMINIONS—NŌ.

NIZAM'S DOMINIONS, *nĩ zāmz'*, or **HAIDARABAD** *hĩ-da-rā-bād'*: most important of the native or feudatory states of India, occupying the greater part of the Deccan proper or central plateau of s. India, between the provinces of Madras and Bombay; 81,807 sq. m. (excluding the British assigned districts of BERAR, q. v.) The surface is a slightly-elevated table-land. The principal rivers are the Godavari (Godavery), with its tributaries the Dudhna, Manjira, and Pranrita; and the Kistna (Krishna), with its tributaries the Bimah and Tungabhadro. The soil is naturally very fertile, but poorly cultivated; yet, wherever it receives moderate attention, it yields harvests all the year round. The products are rice, wheat, maize, mustard, castor-oil, sugarcane, cotton, indigo, fruits (including grapes and melons), and all kinds of kitchen vegetables. The pasturages are extensive, and sheep and horned cattle are numerous. Marsh and jungle, however, occupy a great space, and originate fevers, agues, diseases of the spleen, etc., though the climate is quite healthful where these do not abound. The mean temperature of the cap., Hyderabad, in Jan. is 74° 30', and in May 93°. The inhabitants manufacture for home use woolen and cotton fabrics, and export silk, dressed hides, dye-stuffs, gums, and resins. The Nizam is a Mohammedan, but his subjects are mostly Hindus. His revenue is about \$20,000,000 a year; and he maintains an army of 30,000 foot and 8,000 cavalry. See JANG, SIR SALAR.

In 1687, the territory, now known as the N. D., became a province of the Mogul empire; but 1719, the gov. or viceroy of the Deccan, Azof Jah, made himself independent, and took the title *Nizam-ul-Mulk* (Regulator of the State). After his death, 1748, two claimants appeared for the throne, his son Nazir Jung, and his grandson Mirzapha Jung. The cause of the former was espoused by the E. India Company, and that of the latter by a body of French adventurers under General Dupleix. Then followed a period of strife and anarchy. In 1761, Nizam Ali obtained the supreme power, and after some vacillation signed a treaty of alliance with the English 1768. He aided them in the war with Tippoo, Sultan of Mysore, and at the termination of that war, 1799, a new treaty was formed, by which, in return for certain territorial concessions, the E. India Company bound itself to maintain a subsidiary force of 8,000 men for the defense of the N. D. The Nizam remained faithful to the British during the mutiny of 1857-8. The territory is frequently called Hyderabad or Haidarabad (q. v.). A British resident advises the Nizam. Pop. of N. D. (excluding the Brit. assigned districts of Berar) (1881—first census ever taken) 9,845,594; (1891) 11,537,040; (1901) 11,141,142.

NIZH'NI-NOVGOROD': see **NIJNI-NOVGOROD**.

NIZH'NI-TAGILSK': see **NIJNI-TAGILSK**.

NO., pronounced *nim'ber*: the common commercial abbreviation of *number* [It. *numero*—from L. *numerus*].

NO—NOBILE OFFICIUM.

NO, ad. *nō* [AS. *na*; Skr. *na*; Pers. *nah*, no, not (see NAY)]: a word of denial or refusal: expressing a negative; the opposite of *yes*; *no* is emphatic after another negative—as, ‘there is *none* righteous, *no*, not one’: N. a refusal; a denial: a negative vote, generally in the plural, the negative voters, as, the NOES [*nōz*] have it: see AY.

NO, a. *nō* [an abbreviation of *none*: L. *non*, not]: not any; not one; none. No EFFECTS, a return to a writ or attachment when there can be found no property upon which to levy. *Note*.—Before the comparative degree, *no* may be regarded as an adjective or an adverb, the word ‘time’ or the like being understood in the former case, and signifies ‘in no respect or degree; not at all,’ as *no* higher, *no* longer, *no* shorter, *no* more.

NOACHIAN, a. *nō-ā'kī-ān*: pertaining to the patriarch *Noah* or his deluge. NOACHIDÆ, n. plu. *nō-āk'ī dē* [from *Noah*, and the patronymic termination *dē*, signifying descendants]: the immediate families or tribes descended from Noah, or from Shem, Ham, and Japheth.

NOAILLES, *nō-ā'yē*. LOUIS MARIE, Vicomte DE: 1756. Apr. 17—1804, Jan. 9; b. Paris. He married a sister of the wife of Lafayette. became a major in the French army 1771 and was brevetted brig.gen. previous to 1779 when he came to the United States and rendered valuable assistance to the colonists in their war for independence. Returning to France he became a member of the states general, and 1789 introduced the famous measure abolishing titles, feudal privileges, and slavery in all French territory. He was pres. of the constituent assembly 1791, came to the United States 1793. became a lawyer, and made a fortune as a banker in Philadelphia. He took an important part in the war at San Domingo 1803. and was mortally wounded in a brilliant and successful engagement between a vessel which he commanded and an English war ship. He died at Havana.

NOB, n. *nōb* [an abbreviation of English *noble* in its general application to a person of the higher class]: in *slang*, a person of superior position in life; a fop. NOB'BY, a. *-bī*, having the character of a nob; capital; neat; got up with care in matters of dress: see SNOB.

NOBILE OFFICIUM, *nōb'ī-lē ōf fīsh'ī-ūm* [L. noble duty]: term in Scotch law to denote the high prerogative right of the court of session to exercise jurisdiction in certain cases e.g., to appoint a judicial factor to young children or to lunatics.

NOBILITY.

NOBILITY: distinction of rank in civil society which makes a person known above the mass of the people. Society has a tendency to inequality of condition, arising from the natural inequality, physical, moral, and intellectual, of those who compose it, aided by diversity of external advantages, and of principles and habits imbibed at an early age. This inequality is apt to increase; the son, inheriting the faculties or at least the opportunities of his father, is more favorably situated than his father was for making use of them. This rule holds at least in a sufficient number of cases, and for a time; hence, in almost every nation in even the very early stages of civilization something like a hereditary N. appears. Privileges originally acquired by wealth or political power are secured to the family of the possessor of them; and the privileged class come to constitute an order, admission into which requires the consent of society or of the order itself.

The ancient Romans were divided into *nobiles* and *ignobiles*, a distinction corresponding at first to that of patricians and plebeians. A new N. afterward sprang out of the plebeian order, and obtained, B.C. 336, the right to rise to high offices in the state; and in course of time the descendants of those who had filled curule magistracies inherited the *jus imaginum*, or right of having images of their ancestors—a privilege which, like the coat-of-arms in later ages, was considered the criterion of N. The man entitled to have his own image was a *novus homo*, while the *ignobilis* could neither have his ancestor's image nor his own.

The origin of the feudal aristocracy of Europe is in part connected with the accidents which influenced the division of conquered lands among the leaders and warriors of the nations that overthrew the Roman empire. Those who had acquired a large share of territorial possession, and their posterity to whom it was transmitted, were naturally deemed the fittest persons to occupy the great offices of state and wield political power. The Frankish kingdom in Gaul was divided into governments, each under the authority of a chieftain called a count or *comes*—a designation derived from the *comes* of the Roman empire—whose Teutonic equivalent was *graf*. A higher dignity and more extensive jurisdiction was conferred on the *dux*, or duke, a term also of Roman origin, and implying the duty of *leading* the armies of the country. In the Lombard kingdom of Italy, the same term was applied to the great officers intrusted with the military and civil administration of cities and their surrounding provinces. The marquises were guardians of the frontier marches. In the subinfeudations of the greater N. originated a secondary sort of N., under the name of vavasours, castellans, and lesser barons; and a third order below them comprised vassals, whose tenure, by the military obligation known in England as knight's service, admitted them within the ranks of the aristocracy. In France, the allegiance of the lesser no-

NOBILITY.

bles to their intermediary lord long continued a reality; in England, on the other hand, William the Conqueror obliged not only his barons who held in chief of the crown, but their vassals also, to take an oath of fealty to himself; and his successors altogether abolished subinfeudation.

The military tenant, who held but a portion of a knight's fee, participated in all the privileges of N., and an impassable barrier existed between his order and the common people. Over continental Europe in general, the nobles, greater and less, were accustomed, after the 10th c., to assume a territorial name from their castles or the principal town or village on their demesne; hence the prefix 'de.' or its German equivalent 'von,' still considered over a great part of the continent as the criterion of N. or gentility. Britain was, to a great extent, an exception to this rule, many of the most distinguished family-names of the aristocracy not having a territorial origin: see NAME.

Under the feeble successors of Charlemagne, the dukes, marquises, and counts of the empire encroached more and more on the royal authority; and in time, many of them openly asserted independence and sovereignty, with little more than a nominal reservation of superiority to the king. By the end of the 9th c., the Carlovingian empire had been parcelled into separate and independent principalities, under the dominion of powerful nobles, against whom, in Germany, the crown never recovered its power. In France, however, the royal authority gradually revived under the Capetian race, the great fiefs of the higher N. being one by one absorbed by the crown. In England, where the subjection of the feudal aristocracy to the crown always was, and continued, a reality, the resistance of the nobles to the royal encroachments was the means of rearing the great fabric of constitutional liberty. All those who, after the Conquest, held *in capite* from William belonged to the N. Such of them as held by barony (the highest form of tenure) are enumerated in *Domesday*. Their dignity was territorial, not personal, having no existence apart from baronial possession. The *comes* was a baron of superior dignity and greater estates; and these were in England the only names of dignity till the time of Henry III. The rest of the landholders, who held by other tenures than barony, also belonged to the N. or gentry.

After the introduction of heraldry, and its reduction to a system, the possession of a coat-of-arms was a recognized distinction between the noble and the plebeian. In the words of Sir James Lawrence (*Nobility of the British Gentry*): 'Any individual who distinguishes himself may be said to ennoble himself. A prince judging an individual worthy of notice gave him patent letters of N. In these letters were blazoned the arms that were to distinguish his shield. By this shield he was to be known or *nobilis*. A plebeian had no blazonry on his shield, because he was *ignobilis*, or not worthy of notice. Hence

arms are the criterion of N. Every nobleman must have a shield of arms. Whoever has a shield of arms is a nobleman. In every country of Europe without exception, a grant of arms, or letters of N., is conferred on all the descendants.' On the continent, the term noble is still generally used in this sense; in England, it is now more common to restrict the words noble and nobility to the five ranks of the peerage constituting the greater N., and to the head of the family, to whom alone the title belongs. Gentility, in its more strict sense, corresponds to the N. of Sir J. Lawrence and of continental countries. This difference of usage is a frequent source of misapprehension on both sides of the Channel; at some of the minor German courts, the untitled member of an English family of ancient and distinguished blood and lineage has sometimes been postponed to a recently created baron or 'Herr von,' who has received that title, and the gentility accompanying it, only with his commission in the army. It has been taken for granted that the latter belongs to the 'Adel' or N., and that the former does not.

The original higher N. of Germany consisted of the dynasty nobles, i.e., the electoral and princely houses of the realm, with those counts and barons who had a seat in the diet or estates of the realm. These last have, since 1815, all been elevated to higher titles; most of the counts, in recompense for their acquiescence in the abolition of the German empire, receiving the diploma of prince, a title to which English dukes, marquises, and earls have also an undoubted right. The lower German nobility, corresponding to English gentry, were the merely titular counts and barons (i.e., those who had no seat in the diet), the Edelherren and Bannerherren (something like English Bannerets), the Knights of the Holy Roman Empire, the 'Edlen von' (who now take the style of baron), and the common nobles distinguished only by the prefix 'von.' Throughout the middle ages, the lesser N. of Britain preserved a position above that of most continental countries, being, unlike the corresponding class in Germany, allowed to intermarry with the high N., and even with the blood-royal of their country.

The higher N., or N. in the exclusive sense, of England, consist of the five temporal ranks of the peerage—duke, marquis, earl, viscount, and baron (in the restricted signification of the word), who are members of the upper house of parliament. Formerly, all the barons or tenants-in-chief of the sovereign were bound to attend his councils; but after the reign of Edward I., only a select number of them were summoned; the rest appeared by representatives—the former were considered the greater, the latter the lesser barons: see MINOR BARONS. In Scotland, all barons continued to sit in parliament till a much later period; and after the minor barons attended only by representatives from their body, these representatives sat in the same house with the greater N., and, until the union, their votes were recorded as those of the

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‘small barrounis.’ By the act of union between England and Scotland, the Scotch peers elect 16 of their number to represent their body in the house of lords in each parliament. The peers of Ireland, in virtue of the Irish act of union, elect 28 of their number to sit in the house of lords for life. The act of union with Scotland has been understood to debar the sovereign from creating any new Scotch peerages; all peers created in either England or Scotland between that date and the union with Ireland are peers of Great Britain; and peers created in any of the three kingdoms subsequently to the union with Ireland are peers of the United Kingdom, with this exception, that one new peerage of Ireland may be created on the extinction of three existing peerages. When the Irish peers are reduced to 100, then, on the extinction of one peerage, another may be created. All peers of Great Britain or of the United Kingdom have a seat in the house of lords. A Scotch peer, though not one of the 16 representative peers, is debarred from sitting in the house of commons, a disability which does not attach to Irish peers. The peerage of the United Kingdom is, from time to time, recruited by new additions, the persons selected being in general peers of Scotland or Ireland; younger members of the families of peers; persons distinguished for naval, military, political, or diplomatic services; eminent lawyers promoted to high judicial appointments; persons of large property and ancient family, noble in the more extended sense; and occasionally, though rarely, persons who have by commerce acquired large fortunes and social importance. At present, the peerage comprehends about 575 individuals—the number of peerage titles being much greater, as several titles often merge in one person. Five royal dukes are included in this enumeration, also 87 peers of Scotland, and 183 of Ireland. Only 25 of the present Scotch, and 89 Irish, peers are without seats in the house of lords, in consequence of there being, besides the representative peers, 40 peers of Scotland, and 80 of Ireland, who are at the same time peers either of England, Great Britain, or of the United Kingdom. For the privileges belonging to peers as members of parliament, see PARLIAMENT; as peers, they possess also the following immunities: they can be tried only by their peers for felony, treason, or misprision of treason, when all the members of the peerage are summoned, and the accused is acquitted or condemned by the voice of the majority, given not on oath, but ‘on honor.’ This privilege, which extends to peeresses, either in their own right or by marriage, is in Scotland further regulated by Act 6 Geo. IV. c. 66. A peer answers to bills in chancery on his honor, and not on oath; but when examined as a witness in civil or criminal cases, or in parliament, he must be sworn. He cannot be bound over to keep the peace elsewhere than in the court of queen’s bench or of chancery. Scandal against a peer is ‘*scandalum magnatum*,’ a more heinous offense than slander against another per-

son, and subjects the offender by various English acts to statutory punishments. All privileges belonging to the English peers, except the right of sitting in the house of lords, were extended to the peers of Scotland by the treaty of union. A peer who has different titles in the peerage takes in ordinary parlance his highest title, one of the inferior titles being given by courtesy to his eldest son. Certain Courtesy Titles (q.v.) belong also to the daughters and younger sons of a peer, but do not extend to their children.

In France, a limited body of the higher N., styled the peers, were in the enjoyment of privileges not possessed by the rest. The title of duke was subject to strict rule, but many titles of marquis and count, believed to be pure assumptions, were recognized by the courtesy of society. The head of a noble family often assumed at his own hand the title of marquis; and if an estate was purchased which had belonged to a titled family, the purchaser was in the habit of transferring to himself the honors possessed by his predecessor—a practice to which Louis XV. put a stop. Immediately before the Revolution, 80,000 families claimed N., many of them of obscure station, and less than 3,000 of ancient lineage. Nobles and clergy together possessed two-thirds of the land. Practically, the estimation in which a member of the French N. was held depended not so much on the degree of his title as on its antiquity, and the distinction of those who had borne it. The higher titles of N. were not borne by all members of a family; each son assumed a title from one of the family estates—a custom productive of confusion. Unlike 'roturier' lands, which divided among all the children equally, noble fiefs went to the eldest son. The Revolution overthrew all distinction of ranks. 1790, June 18, the national assembly decreed that hereditary N. was an institution incompatible with a free state, and that titles, arms, and liveries should be abolished. Two years later, the records of the N. were burned. A new N. was created by Emperor Napoleon I. 1803, with titles descending to the eldest son. The old N. was revived at the Restoration. All French marquises and viscounts are of pre-revolution titles, none having been created in later times.

Commercial pursuits have more or less in different countries been considered incompatible with N. In England, this was less the case than in France and Germany, where for long a gentleman could not engage in any trade without losing his rank. A sort of commercial 'Bürger-Adel,' or half-gentleman class, was constituted out of the patrician families of some of the great German cities, particularly Angsburg, Nürnberg, and Frankfurt, on whom the emperors bestowed coats-of-arms. In semi-feudal Italy, there was on the whole less antagonism between N. and trade than n. of the Alps. The aristocracy of Venice had its origin in commerce; and though untitled, they were among the most distinguished class of nobles in Europe. On the other hand, in Flor-

ence, in the 14th c., under a constitution purely mercantile, N. became a disqualification from holding any office of the state. In order to the enjoyment of civil right, the nobleman had to be struck off the rolls of N.; and an unpopular plebeian was sometimes ennobled, in order to disfranchise him. A little later, there grew up, side by side with the old N., a race of plebeian nobles—as the Ricci, the Medici—whose pretensions were derived originally from wealth, and who came to be regarded eventually as aristocrats by the democratic party.

Italian N. has this peculiarity, that it does not, for the most part, flow from the sovereign, but from the municipal authorities of the towns, acting in entire independence of him. The municipalities can confer N. on whom they please, by inscribing his name in their respective *Libri d'oro*. The registers of N. of most of the Tuscan towns are deposited in the *Archivio della Nobiltà*, or Herald's Office, at Florence—an institution created by the first sovereign of the House of Lorraine. The municipalities have, however, no power to confer titles, though at one time several persons, a few Englishmen included, on the strength of their names being in the *Libro d'oro* of Fiesole, assumed the titles of marquis, count, and baron—an abuse stopped by the late grand duke of Tuscany. In Rome, there is a small number of nobles—as the Colonnas, Caetanis, and Orsinis—who hold their fiefs as sovereign princes; the rest of the N., many of them of very ancient lineage, are municipal, the power of creation being vested in the senator, himself a nominee of the pontiff, and the *Conservatori*, chosen by lot from the Capitoline nobles. In the 18th c., so many undistinguished persons had been added to the roll of N., that Pope Benedict XIV. found it necessary to prohibit by a bull the admission of any one whose ancestors had not filled certain high offices in the state. The same decree limited the number of noble families to 187, designated the *Patriziato Romano*, out of whom 60 of the oldest and most illustrious were chosen as *Nobili Conscritti*, otherwise called the Capitoline nobles, and restricted the admission to the patriziato for the future to persons who had rendered important services to the city, and whose names were approved by the *Congregazione araldica*, an exception being made in favor of members of the reigning pontiff's family. As the families of the conscritti became extinct, other patrician families, designated *Nobili Ascritti*, were added by the municipality to make up the number. The titles at present borne by the Roman N. are: 1. Prince or duke, generally so called, but officially designed 'Barone Romano'—a title acquired by the Borghesi, Rospigliosi, and others, from popes of their respective families; in the case of the Colonnas, Dorias, Odescalchi, etc., from royal or imperial erection; and in other instances—e.g., the Caetani and Massimi—from investiture by the pope as a temporal sovereign. 2. Marquis and count; many of these are provincial nobles, with titles derived gener-

ally from small feudal tenures, of which, in some instances, it would be difficult to show the diploma, or point out the period of creation. In some parts of the papal states it is understood that every head of a noble house is a marquis; and in the March of Ancona, Sixtus V. conferred the right to bear the title of count on all who were of noble blood at the period. 3. Knights (*Carabinieri*), a designation given to all who wear a Roman order, to Knights of Malta, and generally to younger sons of the titled N. 4. Princes, who, with the sanction of the pope, have purchased honors together with ancient fiefs that carried with them ducal or princely titles, most of them *novi homines*, as the Torlonias. Titles do not descend to the younger members of the family; it is the general usage for the head of the house to bear the most ancient title, while the eldest son, on his marriage, assumes the second in antiquity. The title is sometimes the family name, sometimes the name of a feudal possession. The proper designation of the younger branches of titled families is 'dei Principi,' 'dei Duchi,' 'dei Marchesi,' etc.

The N. of Spain boasts of special antiquity and purity of blood, a descent from warriors and conquerors alone, without the infusion of any of the elements derived from the church, law, and commerce that are found in other countries. 'Hidalgo' (*hijo d'algo*, son of somebody, not *filius nullius*) is a term which implies gentility or N. The hidalgo alone has in strictness a right to the title 'Don,' which, like 'Sir' of English knights and baronets, requires the adjunct of the Christian name. When the Christian name is omitted, the title 'Señor' instead is prefixed with the addition of 'de.' 'Don' has latterly been used by persons who have no proper claim to it, about as extensively as 'Esquire' has been used in England. Hidalgoia, till recently, conferred important privileges and immunities. The higher N. are styled *Grandees*; formerly, the title was '*ricohombre*,' and the ceremonial of creation consisted in granting the right of assuming the pennon and caldron (*peñon y caldera*)—the one the rallying ensign of command, the other of maintenance of followers. In distinction from the *grandees*, the class of N. below them are called '*los Titulados de Castilla*.' Red blood is said to flow in the veins of the hidalgo, blue in that of the grandee. Formerly, there were three classes of *grandees*, whose mark of distinction was this—that a grandee of the first class was entitled to put on his hat in the royal presence before the king spoke to him; the second, after the king spoke to him; the third, after the king had spoken and he had replied. The second and third classes are now absorbed into the first. Of the *grandees*, some bear the title duke, some marquis, some count; but it is the ambition of every grandee to unite in himself as many *grandeeships*, or have as many *hats*, as the phrase is, as he can. This is effected by the marriage of heiresses through whom *grandezza* descends,

and whose names and titles are assumed by their husbands. An enormous accumulation of titles is sometimes found in the person of one grandee. Titles as well as estates go only to heirs of entail. The titulars of Castile are designed 'vuestra señoría;' in common parlance, 'ucia.' The title of Baron is little used in Spain. Physically and mentally, the grantees have degenerated from their ancestors, and they have not the influence at court and in the country which landed property might be expected to give them. Most of them reside at Madrid, clinging to their nominal rank and real nullity, while practically excluded from all functions of state.

In Russia, what N. existed before Peter the Great was patriarchal, not feudal; but in his anxiety to assimilate everything to a western standard, the czar took the existing aristocracies of states quite differently situated as the model to which to approximate the fortunate of his own subjects. The Russian nobles have ever since been enlarging their privileges by encroachments on those under them. Before Moscow was burned, the mass of the nobles connected with the court lived there in great splendor, and with their domestic serfs constituted half the population of that city.

The preservation of noble blood, untainted by plebeian intermixture, has often been reckoned a matter of much moment. In Spain most of all, this purity of lineage has been jealously guarded. In the German empire, no succession was allowed to fiefs holding immediately of the emperor, unless both parents belonged to the higher N. In France, the offspring of a gentleman by a plebeian mother was noble in a question of inheritance or exemption from tribute, but could not be received into any order of chivalry. Letters of N. were sometimes granted to reinstate persons in this position. It is in Germany still important for many purposes to possess eight or sixteen quarterings, i.e., to be able to show purity of blood for four or five generations, the father and mother, the two grandmothers, the four great-grandmothers; and also, in case of the sixteen quarterings, the eight great-great-grandmothers, having all been entitled to coat-armor. Among the higher grades of the peerage in England, a considerable number may be pointed out who do not possess this complete N. It is in Scotland more usual and more regarded, both among peers and among untitled gentry, where the eight or sixteen quarterings are still in use to be displayed on the funeral escutcheon. At some of the minor German courts, the sixteen quarterings were frequently an illusion, diplomas being granted in the absence of a full pedigree, to declare the parties as noble as if they had sixteen ancestors.

NOBLE, a. *nōtl* [F. *noble*, noble, illustrious, a nobleman—from L. *nōbilem*, famous, of high birth: It. *nobile*; L. *nobilitas*, high birth, the nobles: *noble* is cognate to *knowable*—L. *nobilis* being a form of anc. *gnobilis*, from root of *gnosco*, *novi*, know]: high in excellence or worth;

eminent; great; illustrious; exalted; sublime; distinguished by rank and title; of the best kind, as a metal: N. a person of rank above a commoner; an old gold coin, value 6s. 3d. sterling. NOBILITY, n. *nō-bīl'ī-tī*, the highest classes of society (those who are *known*); titled persons and their near relatives; the peerage; noble birth (see above): dignity; grandeur; common ling excellence. NOBLY, ad. *nō'blī*, with greatness of soul; heroically. NO'BLENESS, n. *-bl-nēs*, the quality of being noble; elevation or dignity of mind or station; grandeur. NO'BLEMAN, n. *-bl-mān*, a peer; a titled gentleman. NOBLESSE, n. *nō-blēs'*, or NOBLESS, n. *nō'blēs* [F.]: persons of noble rank collectively; the nobility. NOBLE METALS, the name given to those metals which can be separated from oxygen by heat alone—viz., gold, silver, platinum, rhodium, iridium, osmium, and mercury.—SYN. of 'noble, a.': honorable; worthy; elevated; generous; liberal; free; ingenuous; heroic; magnanimous; grand; splendid; majestic; imposing; magnificent; stately; superb; august; dignified; renowned.

NOBODY, n. *nō'bōd-ī* [*no*, and *body*]: no one; no person; a person of no importance.

NOCENT, a. *nō'sēnt* [L. *nocens* or *nocen'tem*, injuring, hurting—from *nocēō*, I hurt]: in OE., hurtful; mischievous; guilty.

NOCERA INFERIORE, *nō-chā'rā ĩn-fā-rē-ō'rā*, formerly NOCERA DEI PAGANI, *dā'ē pā-gā'nē*: town of s. Italy, province of Salerno, 8 m. n.w. of the town of Salerno, and on the highway from that town to Naples. It has linen and woolen manufactures. Pop. (1881) 12,830.

NOCK, n. *nōk*: OE. spelling for NOTCH, which see.

NOCTES AMBROSIANÆ, *nōk'tēz ām-brō-sī-ā'nē* [L., *Ambrosial Nights*]: a collection of papers from *Blackwood's Magazine*, 71 in number, 1822-35. An unedited collection was published Philadelphia, 1843. In 1852, R. Shelton Mackenzie, D.C.L., became a resident in the United States, and copiously edited a new edition, including some papers anticipatory of the N. A., entitled *Christopher in the Tent*, and prefixing to the several vols. portraits and biographies of the writers John Wilson (q.v.), 'Christopher North,' William Maginn, J. G. Lockhart (q.v.), and James Hogg (q.v.), 'the Ettrick Shepherd,' who, with 'others,' were the authors of the articles. William Maginn (1793-1842) was born in Cork, entered Dublin Univ. when 14 years old, received the degree LL.D. when 23, established *Fraser's Magazine*, and was a rare scholar and wit. In 1856, Prof. Ferrier, son-in-law of John Wilson, edited the *Noctes*, giving only 39 out of the 71 numbers. The articles deal with everything in nature, history, society, letters, politics; are mostly in dialogue form, contain both original and quoted poetry, are full of incisive criticism and remark, and abound with wit—at times of a rollicking sort—the scene being the festive table of a private club, and the *ambrosianæ* referring to the drink of the Olympian gods.

NOCTILIONIDÆ—NOCTULE.

NOCTILIONIDÆ, *nčk-tŭl-ŭ-ŏn'ŭ-dē*: family of bats, of genus *Noctilio*. They are found in tropical regions, are insectivorous, have ears of moderate size, and have no nasal appendages. The stomach is in the form of a sac with the ends turning toward each other, the molars are large and ridged, and in the middle finger there are two phalanges. In some species the tail extends beyond the membrane by which the hind legs are connected, and the hind feet are provided with strong claws. The body is seldom more than five inches long, but the wings spread to the extent of about 18 inches.

NOCTILUCIN, n. *nčk-tŭ-lŭ'sŭn*: in chem., Dr. Phipson's name for the organic substance supposed to produce the phosphorescence of fish.

NOCTILUCOUS, a. *nčk'tŭ-lŭ'kŭs* [L. *nox* or *noctem*, night; *lucēō*, I shine]: shining in the night or in the dark. **NOCTILUCĀ**, n. *-kă*, an old name for phosphorus; a phosphorescent marine animalcule. **NOCTILUCINE**, -ŭn: substance supposed to impart the quality of phosphorescence to fish, insects, and matter in a state of decay. It is composed of nitrogen and water, and when dried takes the form of a film. It can be dissolved and decomposed by nitric or sulphuric acid, is partially soluble in water, but is insoluble in alcohol or ether. It absorbs oxygen when moist, and as a result of oxidation becomes luminous and gives off carbon dioxide. In medium temperatures it is of the consistence of syrup, and nearly white. The luminous centipede, *Scolopendra electrica*, is said to secrete it in a pure form.

NOCTIVAGANT, a. *nčk-tŭv'ă-gănt* [L. *nox* or *noctem*, night; *vagor*, I wander about]: wandering by night. **NOCTIVĀGĀTION**, n. *-gă'shŭn*, a roving in the night.

NOCTOGRAPH, n. *nčk'tō-grăf* [L. *nox* or *noctem*, night; Gr. *graphō*, I write]: a writing-frame for the blind.

NOCTUARY, n. *nčk'tŭ-ēr-ŭ* [L. *noctu*, by night]: an account of what occurs by night.

NOCTULE, *nčk'tŭl* (*Vespertilio noctula*): largest British species of Bat (q.v.), being nearly three inches long without the tail, which is fully an inch and a half. The ears are oval-triangular, shorter than the head; the muzzle is short and blunt. The N. is seen on the wing during only a short part of the year, retiring early in autumn to hollow trees, caves, or under eaves of buildings, where many are sometimes found together.

NOCTURN—NODDY.

NOCTURN, n. *nők'térn* [F. *nocturne*, nocturnal, also a *nocturn*—from mid. L. *nocturna*, a nocturn—from L. *nocturnus*, belonging to the night—from *nox*, night]: in the *Rom. Cath. Chh.*, a religious service at night, or rather at midnight; one of the portions into which the Book of Psalms was divided by the anc. Fathers; a night piece. The service of *Matins* on Sundays and festivals is divided into three nocturns, each of which consists of three (or more) Psalms and three *lessons*: the lessons are from the Scriptures, from the life of a saint, or from a homily of some Father. **NOCTURNAL**, a. *nők-tér'nāl*, nightly; done or happening by night: N. an instrument for taking observations by night. **NOCTUR'NALLY**, ad. -*lī*. *Note*.—In the early Christian Chh., *nocturns* was a service at midnight, and *lauds* an early morning service. Both were subsequently conjoined and called *Matins*: see **MATINS**, under **MATIN**: **CANONICAL HOURS**, under **CANON**: also **BREVIARY**.

NOD, n. *nöd* [Bav. *notteln*, to move to and fro: Icel. *hníoda*, to hammer: Dut. *knodse*, a cudgel]: a movement as if striking with the head; a slight, quick inclination of the head as in token of recognition; a quick movement forward or sidewise of the head in drowsiness or sleep, while in a sitting or upright posture; a command: V. to signify by a slight and quick bending of the head; to be drowsy; to make a slight bow; to beckon with a nod. **NOD'DING**, imp.: **ADJ.** inclining the head with a short quick motion; in *bot.*, having the summit so much curved that the apex is directed perpendicularly downward. **NOD'DED**, pp. **NOD'DER**, n. -*dér*, one who nods. **NOD'DINGLY**, ad. -*lī*.

NODAL, **NODATED**: see under **NODE**.

NODDLE, n. *nöd'dl* [Icel. *hnod*, the round head of a nail: Dut. *knod*, a knob: Dan. *knude*, a knot, a protuberance: L. *nodus*; It. *nodo*, a knot]: *properly*, the projecting part at the back of the head; the nape of the neck; then, in jest or contempt, the head itself.

NODDY, n. *nöd'dī* [It. *noddo*; Norm. F. *nauden*, a silly-pate]: simpleton; fool: a kind of sea-fowl supposed to be especially stupid.—*Noddy* (*Megalopterus* or *Anous*) is a genus of birds of family *Laridae*, differing from terns in having the bill slightly angular, thus exhibiting an approach to gulls, and the tail not forked but somewhat wedge-shaped. Only one species is known (*M.* or *A.* *stolidus*), a bird widely diffused in both northern and southern hemispheres, and familiar to sailors, not only as often seen skimming over the water in quest of fishes, but also as frequently alighting on vessels, and, particularly during the night, suffering itself to be taken by the hand. At its breeding-places also, where not accustomed to the visits of man, it scarcely gets out of the way, and the female sits undisturbed on the nest. Hence it commonly shares with the Booby the reputation of unusual stupidity. It is about 15 or 16 inches long from the tip of the bill to the end of the tail, the general

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color brownish black. The N. is very abundant in warm latitudes; and on some of the *keys* of the W. Indies, and other islets of different parts of the world, it breeds in immense numbers. Particular islets seem specially selected as breeding-places of noddies; and there their



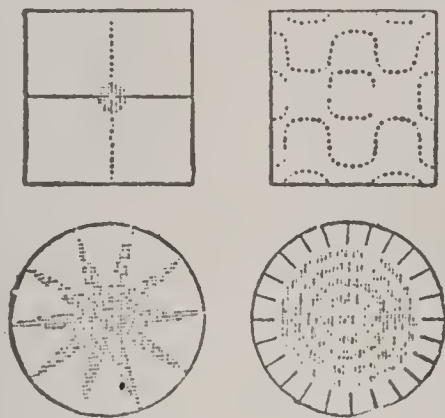
Noddy (*Megalopterus stolidus*).

nests are sometimes so closely placed that it is not easy to walk among them. Each nest generally contains three eggs, about two inches long, which are very good to eat, and are in some places collected in great numbers.

NODE, n. *nōd* [L. *nodus*, a knot or knob: It. *nodò*—(see KNOR)]: a knot; a knob; a lump; one of the two points where the orbit of a planet intersects the ecliptic (see NODES, in Astronomy): in *bot.*, the part of the stem of a plant out of which the leaves grow (see STEM): the point in which two curves meet: in *poetry*, the plot of a piece: in *music*, one of the fixed points of a sonorous chord (see NODAL): in *surg.*, swelling, usually oblong, on a superficial bone, e.g., the tibia, ulna, clavicle, and frontal bone; due to a syphilitic taint, to scrofula, or to rheumatism. The immediate cause is the infiltration of lymph or serum into the periosteum, or between it and the bone. The treatment depends on the constitution of the patient, and the primary cause of the swelling. NODAL, a. *nō'dāl*, pert. to a node or knot; applied to those points, lines, and sections in a vibrating body which become arrested and remain at rest, while the vibrating parts assume various forms. When a string or metallic cord, under strong tension, is made to vibrate, there are audible, besides the principal sound, several secondary and shriller sounds; these, denominated harmonic sounds, are produced each by a certain portion of the chord which vibrates independently. Further investigation has shown that every vibrating string is divided into a number of portions alternately

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vibrating in opposite directions, and that the points which separate these portions from each other are at rest. These points are known as *nodal points*, and their situation may be found by placing small pieces of paper on an extended string, and causing it to vibrate; the points from which the pieces of paper have not been displaced are the nodal points. If a plate of glass or metal be held in the hand, and a well-rosined fiddle-bow be drawn across the edge, particles of fine dust, previously placed on the plate, will arrange themselves in lines, showing that along these lines no vibration has taken place; these lines are *nodal lines*, and are found in



Nodal Points.

most cases to group themselves together into geometrical figures, and occasionally to present beautiful designs (see in the fig.). The arrangement of the nodal lines depends on the point by which the plate is held, and on the form of the plate itself. Similarly, if a column of air in a wholly or partially closed tube be acted on by the force of the breath applied through a hole at any point in its length, the column will divide itself into cylindrical portions each in a state of vibration, and separated from one another by transverse sectional portions in which the air is at rest; these latter sections are known as *nodal sections*. NODATED, a. *nō-dā'tēd*, knotted. *Note.*—The intervals between *nodes* are called *inter-nodes*.

NODES, *nōdz*, in Astronomy: the two points in which the orbit of a planet intersects the plane of the ecliptic, the one through which the planet passes from the s. to the n. side of the ecliptic being called the *ascending node* ♊, and the other the *descending node* ♋. As all the bodies of the solar system, whether planets or comets, excepting the earth, move in orbits variously inclined to the ecliptic, the orbit of each possesses two N., and a line drawn joining these two points is called the *line of nodes* of each body: the earth, moving in the plane of the ecliptic, has no N. The places of the N. are not fixed points on the plane of the ecliptic, but are in constant fluctuation, sometimes *advancing* (eastward), at other times *receding* (moving westward). This motion is produced by the mutual attractions of the planets, which tend to draw

each of them out of the plane of its orbit; and it depends on the relative position of the planets, with respect to another planet, whether that planet's N. shall advance or recede. On the whole, however, the majority of possible 'relative positions,' or *configurations*, as they are called, is in favor of a retrograde motion; and we find, by observation, that in an average of many revolutions round the sun a constant retrogradation of the node takes place. The determination of this retrogradation in the case of the planets is a most complicated problem, as the separate action of each on the others has to be taken into account; but in the case of the moon's N., the immensely preponderating attraction of the earth, and its great relative magnitude as compared with the moon, enable us to throw out of account any other disturbing influence, and at the same time to exhibit clearly the cause of this motion of the N. Suppose the moon to have attained her greatest n. latitude, and to be descending toward the ecliptic, and the earth to be in longitude between her and her previous descending node, then the earth's attraction will tend to *depress* the moon's orbit, and cause her to descend to the plane of the ecliptic sooner than she would otherwise have done; in this case we have a retrogradation of the node. Again, supposing the moon placed as before, but the earth in advance of the line of N., then the earth's attraction will tend to draw the moon forward in her orbit so as to meet the ecliptic in a point beyond the previous descending node; in this case, the moon's node has advanced. As in the case of the planets, however, the retrograding tendency preponderates. The average annual retrogradation of the N. is very small in the case of the planets, but considerable in that of the moon: see MOON. In calculating the courses of the planets, the 'length' of the ascending node, or its distance in longitude from the vernal equinox, is a most important element. See ORBIT.

NODIER, *no-de-ā'*, CHARLES E.: French littérateur: abt. 1780-1844, Jan. 27; b. Besançon. His father, a distinguished lawyer, warmly embraced the side of the Revolution, and brought up his son in the same principles. At the age of 12, he was a member of the famous soc. of *Amis de la Constitution*, and hated tyranny with an ideal and classical hatred; but he soon became a royalist; then again, under Napoleon, a republican; and indeed during his whole career showed a lack of that robust opinionativeness without which it is impossible for a man to become a genuine politician. His life was one of hardest literary work, in which time and even admirable talents were wasted on inferior subjects. Besides editions of the French classics, grammatical, lexicographical, and poetical works, he wrote numerous tales and memoirs. A portion of his writings was collected and published, 12 vols., Paris 1832-34, under the incorrect title *Œuvres Complètes*.

NODOSARIA—NOGGING.

NODOSARIA, n. plu. *nō-dō-sā'ri-ă* [L. *nodosus*, knotted—from *nodus*, a knot]: a genus of jointed foraminifera found living or in strata of recent formation.

NODOSE, a. *nō-dōs'* [L. *nodosus*, full of knots—from *nodus*, a knot]: knotty; having knots or swollen joints. **NODOSITY**, n. *nō-dōs'ī-tī*, knotliness; a knot in wood formed of concentric layers; in *surg.*, a calcareous secretion found in joints in gout, etc.

NODULE, n. *nōd'ūl* [L. *nodulus*, a little knot—from *nodus*, a knot]: any knot-like body; any irregular concretion of rocky matter collected around some central nucleus, as *nodules* of flint, ironstone, etc. **NODULAR**, a. *nōd'ū-lér*, pertaining to or resembling a nodule. **NODULED**, a. *nōd'ūld*, having little knots or lumps. **NODULOSE**, a. *-lōs*, or **NODULOUS**, a. *-lūs*, in *bot.*, applied to roots with thickened knobs at intervals.

NOÉ, *nō-ā'*, AMADÉE DE ('CHAM'): 1819, Jan. 26—1879, Sep. 7; b. Paris; son of the Comte de Noé. He studied painting under Delaroche and Charlet, and showed talent for grotesque work. About 1842 his caricatures, under the signature Cham, began to attract attention; and for nearly 20 years the political and social affairs of the country were delineated by him in a wonderfully ludicrous manner. A large part of his drawings appeared first in *Charivari*, but selections to the extent of several volumes have been published in book form. His later work was given chiefly to vaudevilles.

NOEGERATHIA, n. plu. *nō'gér-ā'thī-ă* [after Dr. *Noegerath*]: in *geol.*, a genus of palm-like leaves found in the Carboniferous and Permian systems.

NOEMATICAL, a. *nō'ē-māt'ī-kāl* [Gr. *noēma* or *noēm'-ātā*, a thought]: in *OE.*, intellectual.

NOETIANS: see PATRIPASSIANS.

NOG, n. *nōg* [Gael. *cnag*, a knock, a thump, a knob; *cnagaidh*, bunchy; *cnagaire*, a knocker, a noggin]: a little pot; a block of wood of the size and shape of a brick inserted into the walls of a building to form a hold for the woodwork; the bolt or treenail which secures the keel of each stave employed in sustaining a ship in dock or on the slip; the piece of wood which scrapes the hopper of a mill.

NOGENT LE ROTROU, *no-zhōng' lēh ro-trō'*: town of France, dept. of Eure-et-Loir, in a pretty vale on the Huisne, 32 m. w.s.w. of Chartres. It is a station on the Great Western railway from Paris to Rennes in Brittany; a long, well-built town, with a ruined castle in the Gothic style, residence of the great Sully. Pop. about 7,000.

NOGGIN, n. *nō'gīn* [Gael. *noigean*, a jug or mug with a handle: Ir. *noigin*, a noggin—from Gael. and Ir. *cnag*, a knob, a peg]: a mug or cup.

NOGGING, n. *nōg'gīng*: a kind of brickwork carried up between panels, or within the timber framework of a building. **NOGGING-PIECES**, the horizontal pieces of timber fitting in between the upright timbers or quarters, introduced to strengthen the brickwork.

NOILS—NOLI-ME-TANGERE.

NOILS, *noylz*: technical term for short and broken hairs removed from wool in the process of combing and preparing it for worsted manufactures. The *noils* are used for making inferior yarns, and for *felting* purposes.

NOISE, *n. noyz* [F. *noise*, strife—from L. *nausēā*, disgust, annoyance: Prov. *nausa* or *noisa*, noise, dispute, also applied to the murmur of water: Icel. *gnauth*, applied to the clashing of swords, the dashing of ships, and the like]: confused or disagreeable sound of any kind; loud, rough talking; occasion of talk; quarrelling; uproar; much public conversation: V. to sound loud; to spread abroad, as a report. **NOIS'ING**, *imp.* **NOISED**, *pp. noyzd.* **NOISE'LESS**, *a. -lēš*, silent. **NOISE'LESSLY**, *ad. -lī* (see **DEADENING OF NOISE**). **NOISY**, *a. noyz'i*, full of noise; loud, clamorous. **NOIS'ILY**, *ad. -lī*. **NOIS'INESS**, *n. -ī-nēs*, state of being noisy; loudness of sound. **NOISE'LESSNESS**, *n. -nēs*, a state of silence.—**SYN.** of 'noise, *n.*': cry; outcry; din; clamor; tumult; clatter; stir; sound.

NOISOME, *a. noy'sūm* [It. *noiare*, to annoy, to molest; *noianza*, annoyance (see **ANNOY**)]: unwholesome; injurious; offensive to the smell or other senses. **NOI'SOMELY**, *ad. -lī*. **NOI'SOMENESS**, *n. -nēs*, quality that disgusts; offensiveness to the smell.—**SYN.** of 'noisome': noxious; insalubrious; mischievous; destructive; offensive; disgusting; fetid.

NOLA, *nō'lā*: episcopal city of s. Italy, province of Caserta, 16 m. e.n.e. of Naples; on the site of one of the oldest cities of Campania. The anc. N. was founded by the Ausonians, and fell into the hands of the Romans in the Samnite war, B.C. 313. For its protection, Marcellus in the second Punic war fought in its vicinity the first battles in which the Romans were victorious over Hannibal. Augustus died at Nola, A.D. 14. The first bells for Christian churches are said to have been cast here in the 5th c.: see **BELL**. Numerous coins, and beautiful vases of pale-yellow clay, with figures painted in crimson and maroon, and supposed to have been manufactured here by potters from Corinth, have been found in the vicinity. N. was a flourishing city in the middle ages. Pop. 7,500; with suburbs, 10,000.

NOLENS VOLENS, *nō'lēnz vō'lēnz* [L. unwilling, willing]: in *familiar language*, whether willing or not.

NOLI-ME-TANGERE, *n. nō'li-mě-tān'jēr-ě* [L. *nolo*, I am unwilling; *me*, me; and *tangērē*, to touch—*lit.*, do not touch me]: a familiar name for several species of plants, one of which is the wild or squirting cucumber; the *Impatiens noli-mě-tangērē*, ord. *Balsaminacēæ*, apparently wild in Britain, and having yellow flowers.—Also, popular name for one form of the disease *Lupus* (q.v.).

NOLLEKENS.

NOLLEKENS, nöl'leh-kénz, JOSEPH: 1737, Aug. 11—1823, Apr. 23; b. London: sculptor. His father, who was from Antwerp, and by profession a painter, died when N. was young, and his mother, a Frenchwoman, not remaining long a widow, he received little education. Being placed in the studio of Scheemakers, the sculptor, in Vine street, Piccadilly, he worked assiduously, and to such effect that, 1759, the Soc. of Arts awarded him 15 guineas for a group in clay; 1760, 30 guineas for a bas-relief, and 10 guineas for a model in clay of a dancing faun. Soon after this, N. set out for Rome. He was in his 23d year; he had no patron to support him, and his purse was light, but his heart also was light, and he had been trained to habits of economy. A bas-relief that he carved in stone brought him 10 guineas from England, and the Soc. of Arts voted him 50 guineas for his group in marble of Timoclea before Alexander. But one of the most important events for him, after settling in Rome, was his meeting, in the Vatican, Garrick, who immediately recognized his countryman as the young sculptor to whom the prizes had been awarded by the Soc. of Arts, sat to him for his bust, and paid him handsomely for it. This was the first bust he had been commissioned to model, and it gave him the opportunity of proving where his strength lay. He executed in Rome a bust of Sterne in terra cotta, also, which added greatly to his reputation. After ten years in Rome, he returned to London; took a lease of extensive premises in Mortimer street, where he set up his studio; immediately had full employment, and (1771) was elected an associate of the Acad., and a royal academician the following year. His forte was in modelling busts: to these he gave much truth and character, e.g., busts of Samuel Johnson, his friend and frequent visitor, of Fox, Pitt, and other political characters, and of George III., with whom N. was a great favorite for his blunt and manly English manner. Besides busts, N. executed numerous commissions for public monuments and statues. His statue of Pitt for Cambridge was much praised at the time. He executed also a number of classical and mythological statues and groups, a faun, a Bacchus, five Venuses, Cupid and Psyche, Pætus and Arria, etc. In his later years his habitual frugality became almost miserliness: he died in London, leaving mostly to friends (he had no children) his estate equal to about a million dollars. N.'s execution was faithful and his workmanship delicate; but he lacks vigor and originality.—See Cunningham's *Lives of British Artists*, etc.

NOLLE PROSEQUI—NOMANCY.

NOLLE PROSEQUI, *nŏl' lē prŏs' ě-kwī* [L. to be unwilling to proceed]: in law, an acknowledgment or agreement on the part of the plaintiff in a civil suit, or of the prosecutor in a criminal suit, that he will abandon it or a part of it: it is an entry on the records of a court. N. P. may be entered in a criminal case at any time before the impanelling of the jury; but not afterward unless with defendant's consent. It is not an acquittal, but merely a stay of proceedings. In some states the prosecuting officer may enter a N. P.; in others leave must be had from the court.

NOMAD, or **NOMADE**, n. *nŏm' ād* [Gr. *nomadēs*, wandering or pastoral tribes—from *nomos*, a pasture: It. and F. *nomade*]: one leading a wandering life; one of a tribe which, depending chiefly on flocks and herds, has no fixed habitation, but moves about from place to place for convenience of pasture. The nomad tribes are of a higher grade of civilization than those that live by hunting and fishing, but much inferior to those engaged in agriculture and manufactures. They are generally addicted to robbery, and readily engage in aggressive war, so that they have frequently become conquerors of extensive cultivated countries, as in the instances of the Huns, Arabs, and Tartars. There are now few nomads in Europe, and these only in the steppes near the Black Sea, and the regions of the utmost north, where cultivation is impossible. Almost all the Finnish, Mongolian, and Turkish tribes, and the tribes formed by mixture of these races, in the steppes and deserts of central and n. Asia, are nomads, also the Kurds and the Bedouins, many of the tribes of Africa, and the Gauchos and some other Indian tribes in N. and S. America. **NOMADIC**, a. *nŏ-mād' ik*, leading a wandering life; pastoral; rude; uncivilized. **NOMADISM**, n. *nŏm ā-dīzm*, state of being a nomad. **NOM'ADIZE**, v. *-dīz*, to live as a nomad. **NOM'ADIZING**, imp. **NOM'ADIZED**, pp. *-dīzd*.

NOMANCY, n. *nŏ măn-si* [L. *nomen*, a name: Gr. *mantia*, divination]: the act or practice of divining the destinies of persons by the letters which form their names.

NOMBLES, n. plu. *nŭm'blz* [F. *nombres* (see NUMBLES)]: the entrails of a deer.

NOMBRE DE DIOS, *nŏm'brā dā dē'ōs*: town of Mexico, 35 m. s.e. from Durango, in a mountainous district, near rich silver mines. Pop. 7,000.

NOM'BRIL POINT, in Heraldry: see ESCUTCHEON.

NOME, n. *nŏm* [Gr. *nŏmē*, division or partition of an inheritance—from *nemein*, to deal out, to assign a portion of land as pasture]: a tract of country; a province of anc. Egypt.

NOME, *nŏm*: term in anc. Greek music to denote any melody determined by inviolable rules.

NOMENCLATOR, n. *nŏ'mĕn-klā'tĕr* [L. *nomenclātor*, one who calls a person or thing by name—from *nomen*, a name; *calo*, I call]: a person who gives names to things.

NOMENCLATURE, n. *nŏ'mĕn-klā'tūr* [L. *nomenclatūra*, the names by which things are called]: the words, terms, or language employed in any science or art: a vocabulary of terms. NO'MENCLA'TURAJ, a. *-klā'tūr-āl*, pertaining to a nomenclature. CHEMICAL NOMENCLATURE: see CHEMISTRY.

NOMIAL, a. *nŏ'mĭ-āl* [L. *nomen*, a name]: a single name or term in algebra.

NOMINAL, a. *nŏm'ĭ-nāl* [F. *nominal*—from L. *nomĭ-nālis*, nominal—from *nomen*, a name: It. *nominalc*]: existing in name only; consisting in names. NOM'INALLY, ad. *-lĭ*, with regard to a name; by name; titularly. NOM'INALISM, n. *-ĭzm*, the philosophical doctrine that general terms exist only in the mind, being simply ideas or mere words—the doctrine opposed to realism. NOM'INALIST, n. *-ĭst*, one who holds the doctrines of nominalism. NOM'INALISTS, n. plu. a sect that applied the doctrine of nominalism to religion, prominent in which was Roseclin in France, 1040–1120. See NOMINALISM.

NOM'INALISM: in the great philosophical dispute of the middle ages, the doctrine that general or abstract ideas have no separate entity and are without real existence. It was contended by one party that abstractions—e.g., a circle in the abstract, beauty, right—had a real existence apart from round things, beautiful objects, right actions: this theory was called Realism. Those that held the opposite view were called Nominalists, because they maintained that there is nothing general but *names*; the name 'circle' is applied to everything that is round, and is a general name; but no independent fact or property exists corresponding to the name. There is nothing in a general name, they say, but a declaration of resemblance among a number of things; all things that the name is applied to resemble one another in some point, which point of resemblance the mind can consider apart from the points of difference; this act of isolated consideration being what is called the power of abstraction. We can be engaged in thinking of the smell of a rose, we can compare it with

NOMINALISM.

other sweet odors, and speculate as to the nature of the material that gives the odor, or as to the pleasure that we derive from it; all this is a process of abstract thinking, but it would not of itself suffice to prove that the odor has a separate existence. We might also confine our attention to the mere form or outline of the rose, and compare it with other forms; but we should be still less able to affirm the independent existence of this particular form.

Realism must be traced back to Plato's system of Ideas, or the eternal and independent existence of general attributes, from which (he taught) the concrete embodiments were derived. There existed in the Divine Mind, according to Plato, patterns, models, or archetypes, according to which individuals were formed. Thus the archetype circle was the original of all actual round things. Aristotle denied the separate existence of these general forms, and held that they existed only in connection with matter, or with objects in the concrete. The Stoics repudiated universals in both senses. The Aristotelian view constituted the Scholastic Realism, and prevailed until the 11th c., when a reaction took place in favor of the Stoical doctrine, headed by Roscelin of Compiègne and John the Soplhist. This was the commencement of N. The celebrated Abelard was a disciple of Roscelin, and induced large numbers to depart from the Realistic notions, which were identified at the time with religious orthodoxy. The controversy raged through the 12th c. with a violence which now seems incredible. Kings and nations took sides: it has been said that scarcely a potentate in Europe refrained from ranging himself on one side or the other in this conflict of speculations. Thomas Aquinas and Duns Scotus, in the 13th c., gave their powerful adhesion to Realism. In the 14th c., William Occam, English Franciscan friar, pupil of Scotus, revived the advocacy of N., which was once more maintained by a number of eminent men, in spite of the hostility of the church, carried to the length of persecution. The controversy subsided at the Reformation, in whose light, as in a new day, men awoke to questions more important than those of scholastic philosophy. The debate, however, in some modified forms, is recurrent, and is traceable in the attitudes of various schools of thinkers at the present day.

A middle view—rather, what was intended for a middle view—between Nominalism and Realism was held by a few persons when the contest was at its height, and has reappeared from time to time; which was, that though general properties have no separate existence in nature, they can be conceived in the mind apart from any concrete embodiment, e.g., we may form an idea of a circle, irrespective of any individual round body: see CONCEPT (CONCEPTUALISM). This view is tacitly implied in many different lines of opinion now held. See GENERALIZATION: IDEA: PERCEPTION.

NOMINATE—NON-APPEARANCE.

NOMINATE, v. *nöm'ĩ-nāt* [L. *nominātus*, called by name—from *nomen*, a name: It. *nominare*: F. *nommer*]: to appoint by name; to propose or designate by naming for an office or appointment; in *OE.*, entitle; set down. **NOM'INATING**, imp. **NOM'INATED**, pp. **NOM'INATOR**, n. *-tēr*, one who nominates. **NOM'INA'TION**, n. *-nā'shŭn* [F.—L.]: state of being nominated; the act or power of mentioning by name; power of appointing. **NOM'INOR**, n. *-nōr*, one who points out or nominates. **NOM'INEE**, n. *-ĩ-nē*, one who has been proposed for an office; the person named by another to an office. **NOMINATIVE**, a. *nöm'ĩ-nā-tiv* [F. *nominatif*—from L. *nominātīvus*]: that simply names; that forms the subject, or part of the subject, of the verb. **NOM'INATIVELY**, ad. *-lī*. **NOMINATIVE CASE**, in *gr un.*, a noun or name in its simple form; the noun or pronoun which generally precedes the verb and forms the subject: see **DECLENSION**.

NOMOGRAPHY, n. *nō-mōj'rā-fī* [Gr. *nomos*, a law; *graphō*, I write]: a description or treatise on law; the art of inditing laws.

NON, *nōn*: a common Latin prefix signifying *not*, reversing the sense of the word which it precedes; a hyphen is generally placed between *non* and the word following, sometimes not—as, *non-ability*, want of ability.

NONAGE, n. *nōn'āj* [L. *non*, not, and Eng. *age*]: minority; legal unmaternity. **NON'AGED**, a. *-ājđ*, not arrived at maturity.

NONAGENARIAN, n. *nōn'ā-jěn-ā'rī-ān* [L. *nonagenāriūs*, the ninetieth: F. *nonagénaire*, ninety years of age]: one who is ninety years old.

NONAGESIMAL, a. *nōn'ā-jēs'ĩ-māl* [L. *nonagesimus*, the ninetieth]: denoting the ninetieth degree or highest point of the ecliptic at any instant.

NONAGON, n. *nōn'ā-gŏn* [L. *nonus*, the ninth; Gr. *gōnĭā*, an angle]: a plane figure having nine sides and nine angles.

NON'-APPEAR'ANCE [for each of the following, see **Non**, and the word itself]: default of appearance: in *law*, term denoting that a party against whom an action or suit has been commenced has not come before the court to defend his right. In many cases, if he does not appear, the suit will go on in his absence, provided he was duly served with the writ of summons or bill. **NON'-APPOINTMENT**, neglect of appointment. **NON'-ARRIVAL**, failure to arrive. **NON'-ASSUMPSIT** [L. he has not taken or received]: in *law*, the usual plea or defense to an action for breach of a contract not by deed; meaning that the defendant denies that he broke the contract, or that there was any contract. **NON'-ATTEN'DANCE**, a failure to attend. **NON'-ATTEN'TION**, want of attention. **NON'-COMMIS'SIONED**, not having a commission (see **Non-commissioned Officers**). **NON'-COMMITTAL**, state of not being pledged or committed. **NON'-COMMUN'ION**, the not having intercourse or fellowship. **NON'-COMPLI'-ANCE**, the not yielding or giving assent. **NON'-COMPLY'-**

NON-APPEARANCE.

ING, neglecting or refusing to comply. NON COMPOS MENTIS [L. not in possession of mind, not sound of mind]: see INSANITY: LUNACY: ETC. NON'-CONCUR'ENCE, the not agreeing. NON'-CONDUCTOR, a substance which does not conduct or transmit, or which resists a passage through—applied when speaking of the passage of such bodies as light, heat, sound, electricity, etc., through other bodies. NON'-CONDUCTING, not transmitting or sending through. NON'-CONDUCT'ION, the quality of not being able to conduct or transmit. NON'-CONFORM'IST, n. one who refuses to conform to an established church. NON'-CONFORM'ING, a. not conforming. NON'-CONFORM'ITY, n. the neglect or refusal to unite with an established church in its forms of worship (see NON-CONFORMISTS, below). NON'-CONTA'GIOUS, not catching or communicating by contact. NON'-CONTA'GIOUSNESS, the quality of not being communicable from a diseased to a healthy body. NON'-CONTENT', not satisfied; a nay or dissenting vote in the house of lords. NON'-CONTRIB'UTING, not paying or impugning a portion or share. NON'-DELIV'ERY, not giving over. NON'-DEVEL'OPMENT, the not discovering of something secret; the not increasing. NON'-DISCOV'ERY, want of discovery. NON'-EFFECTIVES, men not fit or available for duty in the army, etc. (see NON-EFFECTIVE, below). NON'-ELAS'TIC, not capable of yielding or bending under pressure without fracturing or breaking; that cannot be bent. NON'-ELECT', one not chosen or elected. NON'-ELEC'TION, the failure of election. NON'-ELEC'TRIC, that conducts the electric fluid; also NON'-ELEC'TRICAL. NON'-EN'TRY, the failure to make a required or proper entry: in *Scottish law*, the condition of a feudal estate when the last vassal has died, and his successor has not been invested or seized of the land. NON'-EPIS'COPAL, not vested in or governed by bishops. NON'-ESSEN'TIAL, not necessary or requisite. NON'-EXECU'TION, failure of due performance. NON'-EXIS'TENCE, a thing that has no existence; the negation of being. NON'-EXIS'TENT, not having existence. NON'-FEAS'ANCE, in *law*, not doing what one is bound to do. NON'-FULFIL'MENT, the not performing or completing. NON'-JOIN'DER, in *law*, omitting to join all the parties to an action or suit. NON'-METAL'IC, destitute of the properties of a metal. NON'-NAT'URAL, unnatural; denoting an abnormal state of body or function. NON'-OBE'DIENCE, failure in required or expected obedience. NON'-OBSER'VANCE, neglect or failure to observe. NON'-PAY'MENT, a neglect in payment. NON'-PERFORM'ANCE, the not doing a promised thing. NON'-PRODUC'TION, the neglect or failure of exhibiting to view, or of producing. NON'-PROFES'SIONAL, unskilled; not belonging to the profession. NON'-PROFI'CIENT, an unskilled person; one who has failed to improve. NON'-PROFI'CIENCY, failure to make progress. NON'-RES'IDENT, a. not residing in a particular place, or in one's proper place: N. one not residing on his own estate, as a gentleman, or in his own official place, as a

NONCE—NON-COMMISSIONED OFFICERS.

clergyman (see NON-RESIDENCE). NON'-RES'IDENCE, state or condition of being a non-resident (see this title below). NON'-RESIST'ANCE, passive obedience; submission to power or authority, however arbitrary, on religious grounds. NON'-RESIST'ANT, n. one who maintains that no resistance should be made to constituted authority, however oppressive the acts of such may be: ADJ. making no resistance to the undue or unjust exercise of power or authority. NON'-RESIST'ING, offering no obstruction. NON'-SEN'SITIVE, wanting sense or perception. NON'-SEX'UAL, having no distinction of sex; neuter. NON'-SLAVE'HOLDING, not possessing slaves. NON'-SOL'VENT, not able to pay debts; insolvent. NON'-SOL'VENCY, inability to pay debts. NON'-SUBMIS'SIVE, unyielding; not compliant. NON'-SUBMIS'SION, want of submission. NON'SUIT (see below).

NONCE, n. *nöns* [a corruption of the OE. phrase, *than anes*, for that only]: present purpose or occasion; used only in the phrase, *for the nonce*.

NONCHALANCE, n. *nöng'shǎ-löngs'* [F. *nonchalance*—from *non*, not, and *chaloir*, to matter—from L. *calere*, to be hot]: coolness; indifference; carelessness. NONCHALANT, a. *nöng'shǎ-löng'*, cool; careless; indifferent.

NON-COMMIS'SIONED OFFICERS, in the Army: officers without a commission, receiving certificate from some subordinate authority; and ranking below sub-lieut.; they comprise corporals, sergeants, etc.; and constitute a numerous and very important class in the regimental system, between the commissioned officers and the men. As the former are not permitted to mix with the private soldiers, lest familiarity should diminish the sway of absolute discipline, it is necessary to have an intermediate class to supervise the men in their barracks and at all times when off the parade. None are so suited for this duty as the best conducted of the men themselves, who are promoted by selection to non-commissioned rank, and hold many privileges and powers unattainable by the privates. The non-commissioned officers can be reduced to the ranks by sentence of a court-martial, or by their col.-commandant; but not by a lieut.col. nor by any junior officer. Accustomed themselves to obey, they are admirable assistants in preserving discipline; veterans, to whom military life is a second nature, they are looked up to by their comrades as examples, to lead in battle or to teach in drill. This rank is a necessity in all armies; in France, the non-commissioned officers are termed *sous-officiers*; in Germany, *unter-offizieren*.

NONCONFORMISTS—NONES.

NONCONFORMISTS, in England: name sometimes given generally to all sectaries who, at any period in English history since the establishment of Protestantism, have refused to conform to the doctrine and practices of the Episc. Church as established by law. It is, however, more frequently used in a restricted sense to denote the 2,000 clergymen who 1662—two years after the Restoration—left the Church of England, rather than submit to the conditions of the Act of Uniformity, which required of every beneficed minister, every fellow of a college, and even every schoolmaster, unfeigned assent to all and everything contained in the Book of Common Prayer. The ejected ministers swelled the ranks of the Congregationalists (then called Independents) and the Presbyterians; and the term N. in Eng. usage is sometimes almost specifically applied to Congregationalists. See **PURITANS: DISSENTERS**.

NONDESCRIPT, n. *nŏn'dě-skřipt* [L. *non*, not; *descriptus*, described]: a person or thing that cannot easily be described—used disparagingly; an oddity; anything not yet described or classed: **ADJ.** undescribed.

NONE, a. n. *nŏn* [AS. *nan*, not, no—from *ne*, not; *an*, one]: not any; not one.

NON-EFFECTIVE: term applied to the portion of the personnel of the army or navy not on active service or in immediate readiness for active service. It thus comprises all officers on retired or half-pay, pensioners, and superannuated officers. In a force liable to frequent augmentations and reductions, the non-effective charge must be considerable, and a large retirement is necessary, in order to rapid promotion. The great French war, also, with the reductions following it, bequeathed to the British an annual non-effective charge of several millions of pounds, not yet wholly expunged. 1883-4, the non-effective charges were £2,916,800 for the army, and £2,071,400 for the navy—a large percentage on the gross cost of the two services. The U. S. milit. and naval force is kept so small in numbers that the non-effective element is comparatively unimportant.

NON-EGO, n. *nŏn-ě'gō* [L. *non*, not; *ego*, I]: see **under Ego**.

NONENTITY, n. *nŏn-ěn'tī-tī* [L. *non*, not; *ens* or *entem*, being]: a thing not existing; the negation of a being; a person of no weight or importance.

NONES, n. plu. *nŏnz* [L. *nonæ*, the nones—from *novus*, the ninth]: in the *calendar of anc. Rome*, the seventh day of each of the months March, May, July, and Oct., and the fifth day of Jan., Feb., April, June, Aug., Sep., Nov., and Dec.; the *nones* occur nine days from the *ides*, reckoning inclusively.

NONES, n. plu. *nŏnz* [see **NONES 1**]: the fifth of the canonical hours in the offices of the Rom. Cath. Breviary devotions, at about 3 P.M.—or about the 9th hour, counting from 6 A.M.; devotions for the ninth hour: see **CANONICAL HOURS: CALEND.**

NON EST INVENTUS, *nōn ěst ĩn-vĕn'tūs*: [L., he has not been found]: technical phrase in law, denoting that when, after judgment, the sheriff endeavors to arrest a party, he is unable to find the debtor after reasonable search. The sheriff's return to the court is called a return of *non est inventus*.

NONESUCH, *n. nŭn'sŭch* [*none*, and *such*]: anything which has no equal, as a fruit or plant; name of an apple.

NONILLION, *n. nŏn-ĭl'yŭn* [L. *nonus*, the ninth, and Eng. *million*]: a number produced by raising a million to the ninth power; in *Eng. notation*, 1 followed by 54 ciphers; in the *French* and *Italian*, one thousand raised to the 10th power, or 1 followed by 30 ciphers.

NON-INTRUSIONIST, *n. nŏn'-ĭn-trŏ'zhŭn-ĭst* [L. *non*, not; and Eng. *intrusionist*]: in *Scotch eccles. hist.*, one who was opposed to a presentee being intruded or forced into the cure of a parish against the will of the people.

NONIONINA, *n. nŏn'ĩ-ŏ-nĩnă* [L. *nonus*, ninth, as occurring in *nines*]: a genus of many-celled organisms occurring as fossils in the Chalk and Tertiary strata, and now living in existing seas.

NONIUS, *n. nŏ'nĩ-ŭs*: a name frequently given to the contrivance for subdividing the scales of graduated instruments, from the supposed inventor *Nonius*; a Frenchman, Vernier, was the real inventor, and the contrivance is generally called the *vernier*.

NON-JUROR, *n. nŏn-jŏ'rĕr* [L. *non*, not; *juror*, I swear, I take an oath]: a person who refused to take the oath of allegiance to the sovereigns who filled the throne of Great Britain after the revolution, conceiving that James II. had been wrongly deposed, and his descendants unjustly excluded from the throne—applied first to that portion of the Episc. clergy of England who at the coronation of William and Mary refused to take the oath of allegiance to these sovereigns. They were great champions of the doctrine of passive obedience on the part of subjects toward kings; and as the triumph of the Prince of Orange was obtained at the expense of that doctrine, it was impossible that they could, consistently with their antecedents, acknowledge him as their rightful king. The house of commons allowed them six months longer than laymen to make up their minds, but declined to adopt the amendment of the lords, viz., that the oath should not be imposed on the clergy. They refused, and were consequently deprived of their sees and benefices. The non-jurors comprised Abp. Sancroft, 8 bishops, and about 400 of the inferior clergy. **NON-JURING**, *a. not swearing allegiance*.

NONPAREIL, *a. nŏn'pă-rĕl* [F. *nonpareil*, matchless—from L. *non*, not; F. *pareil*, like—from mid. L. *paricŭlus*, dim. from L. *par*, equal]: unequalled; matchless: N. that which is matchless: a variety of apple: a size of printing-type, next larger than *agate*, next smaller than *minion* (see **TYPE**, in **Printing**).

NONPLUS—NONUIT.

NONPLUS, n. *nŏn'plūs* [L. *non*, not; *plus*, more]: a condition or state of things in which one can do *no more*, or is unable to proceed; an insuperable difficulty: V. to put or bring to a stand; to perplex completely; to puzzle. **NON'PLUSING**, or **NON'PLUSSING**, imp. **NON'PLUSED**, or **NON'PLUSED**, pp. *-plūst*.

NON-RES'IDENCE: in church law, the offense of a person holding a Spiritual Benefice who absents himself without legal justification from the local precincts within which the duties attached to the benefice are prescribed to be performed. The obligation of residence follows clearly from every principle of law; and from the constant tendency to relaxation on the part of the clergy, it has been a subject of repeated legislation, ecclesiastical and civil, from the very earliest times. The Council of Nice 325, of Antioch 332, and of Carthage 401; the constitutions of the popes from the earliest genuine document of that class, the novels of Justinian, the capitularies of Charlemagne—all speak the same language, and enforce it by the same penalties. During the mediæval period, and especially during the unhappy contests of the western schism, great abuses prevailed. The whole substance of the legislation of the Roman Church on the subject, however, is compressed in the decrees of the Council of Trent, which are mainly contained in the decrees of the XXII. and following sessions, 'On Reformation.' The decrees of the council regard all church dignitaries, and others charged with the cure of souls; and for all, the penalty of absence without just cause, and due permission, consists in forfeiture of revenues, in a proportion partly varying with the nature of the benefice, partly adjusted according to the duration of the absence. For each class, moreover, a certain time is fixed, beyond which, during 12 months, absence cannot be permitted. The duty is imposed on persons named in the law of reporting to the ecclesiastical superiors cases of prolonged absence.

NONSENSE, n. *nŏn'sěns* [L. *non*, not, and Eng. *sense*]: that which is not sense; unmeaning words or language; words which convey no intelligent ideas; absurdity. **NONSEN'SICAL**, a. *-sĭ-kāl*, unmeaning; foolish. **NONSEN'SICALLY**, ad. *-lĭ*. **NONSEN'SICALNESS**, n. *-nĕs*, absurdity.

NON SEQUITUR, *nŏn sĕk'wĭ-tĕr* [L. *non*, not; *sequitur*, it follows]: in *logic*, a term applied to an inference which does not follow from the premises.

NONSUCH: see **NONESUCH**.

NONSUIT, n. *nŏn'sūt* [L. *non*, not, and Eng. *suit*]: in *law*, an abandonment of a suit when actually in court, by the plaintiff, on the discovery of some error or defect, but which does not prevent his beginning his suit again on payment of the costs: V. to enter the abandonment of his suit, by a plaintiff or pursuer, on the record of a court. **NON'SUITING**, imp. **NON'SUITED**, pp. adjudged to have abandoned the suit, as the plaintiff.

NONSUIT: a legal term, meaning an adjudication that on the facts presented by a plaintiff in an action he cannot recover; it decides only the particular action; it does not decide the right of the parties except as to the precise facts presented at the time the N. is ordered. It is not a final adjudication and so it is not a bar to a subsequent action, unless the N. is ordered on the merits of the case. There are two kinds of N., voluntary and compulsory. If the plaintiff at any time before the case has been finally submitted to the jury, finds that through some accident or defect he will not be able to present facts sufficient to win his case, he may at his request be nonsuited, except in cases where the defendant interposes a counter claim, in which case it rests in the discretion of the court to permit the plaintiff to be nonsuited or not. When the plaintiff has closed his case and it is apparent that he cannot recover, the court will order a compulsory N. on the request of the defendant. This will be done whenever it is clear that a verdict in favor of the plaintiff would be set aside by the court as contrary to the evidence. When a plaintiff is nonsuited he must pay the defendant's costs; and if the N. is compulsory, he can either appeal or may commence the action anew, and try to present sufficient evidence to sustain a recovery. When a N. is ordered by the court, the case is taken out of the hands of the jury.

NONTRONITE, n. *nôn'trō-nīt*: a hydrated tersilicate of iron, found in small kidney-shaped masses, varying in color from green to yellow—so called because found in *Nontron*, in France.

NOODLE, n. *nô'dl* [a probable corruption of **NODDLE**, which see]: an expressive word for a simpleton.

NOOK, n. *nûk* [Scot. *neuk*; Gael. *niuc*, a nook: Fin. *nokka*, the beak of a bird; *nokkia*, to peck: Esthon. *nukka*, a tip, a corner]: a corner; a small recess.

NOON, n. *nôn* [from L. *nona*, for *nona hora*, the *ninth hour* among the anc. Romans, equal to our three o'clock in the afternoon: It. *nona*, the fifth of the seven canonical hours, the service of which was shifted from *mid-afternoon* to *midday*: Icecl. *nen*, the third meal or resting-time of the day]: midday; 12 o'clock; middle of the day; height of the day: **ADJ.** happening at noon; meridional. **NOONDAY**, or **NOONTIDE**, a. *nôn'tid*, pertaining to noon or midday: **N.** the time of noon. **HIGH NOON**, the exact meridian or midday.

NOOSE, n. *nôz* or *nôs* [prov. F. *nous* or *nouzel*, a knot—from L. *nodus*, a knot: comp. W. *nais*, a band, a tie: Gael. *nasy*, a tie-band, a wooden collar for a cow]: a running-knot binding closer the more it is drawn: **V.** to catch or tie in a noose; to ensnare. **NOOS'ING**, imp. **NOOSED**, pp. *nôzd*.

NOOSSA: see **MOLUCCAS**.

NOOTKA DOG—NOR.

NOOTKA DOG: large kind of dog, common in a domesticated state among the natives of the vicinity of Nootka Sound. It has erect, pointed ears. It is remarkable for the extreme abundance of its long woolly hair, which, when shorn off, holds together as a fleece, and is spun and woven into garments. The introduction of this wool-bearing dog into other countries has been suggested, but not yet attempted.

NOOTKAS, nôt'kaz, or AHTS: the family of Indian tribes on Vancouver Island, Canada, and the adjacent mainland. This family includes the N., or Moonchahts, numbering about 3,500 and living on the w. part of the island; the Quackewlth, of which there are 15 or 20 tribes and about the same number of people as the N., living on the island and the mainland; and the allied Cowichians in the e. of the island, numbering about 7,000. The principal god of the N. is Quawteaht, whom they regard as their progenitor; they worship also the sun and moon, and a supernatural bird called 'Tatooch. They are separated into clans. No member of a clan can marry in it, and children belong to the clans represented by their mothers. The posts of their houses are stationary, but the coverings are carried from one place to another as the owners go on their expeditions. They are successful fishermen, and very ingenious in making clothing and various household utensils. The dead are seldom buried, but are placed in boxes, and either hung up in trees or covered with bushes or stones. The Ahts are not friendly to the whites, and cannot safely be trusted. The Cowichians have given some attention to agriculture, and have received missionaries with kindness.

NOOTKA SOUND: inlet on the w. coast of Vancouver's Island, Brit. N. America, lat. 49° 35' n., long. 126° 35' w. Its entrance is protected by an island of the same name, and the Sound can be entered on both sides of the island. It extends inland 10 m. n.e.; but the greatest breadth of water is not more than 500 yards. Numerous small coves and inlets are around the rocky shores. It affords good anchorage.

NOPAL, n. nō'pāl [Mexican, *nopalli*: Sp. *nopal*, the cochineal fig-tree]: a species of cactus or Indian fig on which the cochineal insect breeds; the *Opuntia cochinillifera*, ord. *Cactaceæ*. **NOPALLERIE, n. nō-pāl'ér-ī**, the field where cactuses are cultivated on which cochineal insects may be bred.

NOR, conj. nōr [AS. *ne*, not, and *or*: short for *nother*, old spelling of *neither*]: a connecting particle correlative to *neither*, *not*, expressed or understood; a particle which marks the second or subsequent branch of a negative proposition; poetically used instead of *neither*.

NORD—NORDERNEY.

NORD, *nōr*: most northerly dept. in France (whence its name), corresponding with the former province of French Flanders, bordering on Belgium and the Strait of Dover; 2,185 sq. miles. Its form narrows near the middle at Armentières, on the Lys, almost to a line. It is watered by the Scheldt and the Sambre, with their affluents, and by numerous canals. Next to that of the Seine, it is the most densely peopled dept. in France. The soil is fertile, well cultivated, and yields more abundant harvests than any other part of the country: 883,606 acres are arable. The principal products are wheat, hemp, beet-root, vegetables, tobacco, and fruits. Manufactures of lace, cambric, linens, and beet-root sugar are extensive. It has much larger proportion of railways, roads, and canals than any of the other departments, as well as the most important coal and iron mines. No other dept. has so many populous towns and strong fortresses; none adds so much to the national revenue; in none are the people so intelligent, so susceptible of culture, or so industrious. In educational and benevolent institutions, and learned societies, it ranks next to the dept. of the Seine. The *arrondissements* are Lille, Douai, Cambrai, Valenciennes, Avesnes, Hazebrouck, and Dunkerque. The chief town is Lille.—Pop. of dept. (1881) 1,603,259; (1891) 1,736,341; (1901) 1,866,994.

NORDEN, *nawr'dēn*: town of Prussia, province of Hanover, 72 m. n.w. from Oldenburg, and a few m. from the North Sea, with which it is connected by a canal. Pop. (1880) 6,617; (1890) 6,759.

NORDENSKJÖLD, *nawr'dēn-shöld*, ADOLF ERIC, Baron: b. Heisingfors, Finland, 1832, Nov. 18. He was educated at the univ. in his native place, and became proficient in his favorite studies; but the Russian authorities suspected him of designs against the govt., and he was compelled to leave Finland, and was not allowed to return for several years. He was prof. of mineralogy in Stockholm 1858, and afterward a member of several Arctic expeditions, some of which he organized. He carefully explored and made a map of Spitzbergen, visited Greenland 1870, became a member of the Swedish diet, in which he served two years, surveyed a part of North-East Land 1873, made various other explorations, and 1878 started on the voyage in which he discovered the North-East Passage, and reached Japan the following year. He was made baron 1880, and received various foreign decorations. In 1883 he led an expedition which went farther toward the interior of Greenland than any previous one had done. He died 1901, Aug. 12.

NORDERNEY, *nawr'dēr-nī*: small island of the Prussian province of Hanover, three m. off the coast of E. Friesland; one of a string of islands that line that coast; about 4 sq. m. Since 1797, it has had great repute as a place for sea-bathing, and has about 2,000 summer visitors. The little village at the w. end of the island has a tastefully-built *Conversations-Haus*, 130 ft. long. Trees do not grow here.—Permanent pop. 1,770.

NORDHAUSEN—NORDHEIMER.

NORDHAUSEN, *nawrt'how-zén*: flourishing town of Prussian Saxony, pleasantly situated at the s. base of the Harz Mts., on the Zorge, 38 m. n.n.w. of Erfurt. The surrounding country is very fertile in corn, and in the vicinity commences the *Goldene Aue* (Golden Plain), a fertile valley watered by the Helme. It contains a gymnasium, and numerous churches, one, St. Blasius, containing two pictures by Luke Cranach. It carries on a thriving general trade, is the *dépôt* from which the Harz Mts. are supplied with necessities, and has most extensive distilleries and considerable manufactures of tobacco, succory, chemicals, cloth, leather, etc. From its great export of pork, ham, sausages, etc., N. is called sometimes the Cincinnati of Germany. Its spirit distilleries, of which there are 60 in almost constant operation, produce annually for export more than 100,000 hogsheads of corn-brandy. Pop. (1880) 26,198; (1890) 26,744.

NORDHAUSEN SULPHURIC ACID, *nör-hawz'én*: the strongest or fuming sulphuric acid as prepared at Nordhausen in Prussia; concentrated sulphuric acid.

NORDHEIMER, *nawrd'hī-mēr*, ISAAC, PH.D.: 1809–1842, Nov. 3; b. Memelsdorf, Germany. He was thoroughly educated for a Jewish rabbi, and graduated from the Univ. of Munich, with the degree PH.D., 1834. He came to this country, was prof. of Arabic and other Oriental languages, and acting prof. of Hebrew at the Univ. of New York 1836–1842; and during most of the same period was an instructor in sacred literature in Union Theol. Seminary. He was one of the leading Hebrew scholars of modern times, and a very successful teacher. On the voyage to America he commenced writing a Hebrew grammar, which was published in two vols., passed through several editions, and was pronounced 'the most elaborate and philosophical Hebrew grammar in the English language.' He was a valued contributor to the *Biblical Repository*, published *A Grammatical Analysis of Select Portions of Scripture, or a Chrestomathy*, and left in ms. grammars of the Chaldee and Syriac and the Arabic languages in German; a large Arabic grammar in English; a translation of Ecclesiastes, with explanatory notes, in German; and an unfinished Hebrew concordance. Dr. N., though in long and friendly association with Christian scholars who highly esteemed his services, retained his Jewish faith.

NORDHOFF--NORE.

NORDHOFF, *nawrd'höf*, CHARLES: b. Erwitte, Westphalia, Prussia, 1830, Aug. 31. When five years of age he was brought to this country by his parents, and after attending the public schools in Cincinnati, entered a printing office 1843. The next year he found work in a Philadelphia newspaper office, but soon left it to join the U. S. N., in which he remained three years, afterward sailing in various merchant and fishing vessels. He returned 1853 to newspaper work in Philadelphia, from there went to Indianapolis, and 1857-61 was on the editorial staff of a New York publishing house. He joined the staff of the *Evening Post* 1861, with which paper he remained 10 years. After travelling in California and the Hawaiian Islands, and acting as correspondent of the *New York Tribune*, he became 1874 the Washington correspondent of the *New York Herald*. Among the large number of his publications are *The Merchant Vessel*; *Nine Years a Sailor*; *The Freedmen of South Carolina*; *California for Health, Pleasure, and Residence*; *Politics for Young Americans*; *The Communistic Societies of the United States*; and *God and the Future Life*.

NÖRDLINGEN, *nört'ling-én*: town in w. Bavaria, on the river Eger, 44 m. n.w. of Augsburg by the Munich and Nürnberg railway. It has a Gothic church with a high tower and fine organ; and manufactures of Tyrolese carpets, linens, and woollens, besides a large trade in feathers. N. is historically interesting as the scene of several battles, the most famous of which was fought between 24,000 Swedes, under Count Horn and Duke Bernhard of Saxe-Weimar, and 45,000 imperialists under King Ferdinand. The Swedes were defeated with the loss of 12,000 killed and wounded, 300 banners and standards, 80 cannon, and several thousand prisoners, among whom was Horn himself.--Pop. (1880) 7,837; (1890) 8,004, of whom 6,990 are Protestants.

NORE, *nôr*, THE: sand-bank in the estuary of the river Thames, 4 m. n.e. of Sheerness, on which there is a floating light, the Nore light, lat. 51° 29' n., long. 0° 48' w. The name is commonly applied to the portion of the estuary in the vicinity of the N. light and sand-bank.

NORFOLK.

NORFOLK, *nawr'fok*: a large and important eastern maritime county of England, bounded n. and n.e. by the North Sea, s.e. and s. by the county of Suffolk, s.w. by Cambridge, w. by Lincoln; greatest length e. and w. 67 m., greatest breadth 42 m.; 2,119 sq. m., or 1,356,173 acres. Its coast-line, from Yarmouth to the mouth of the Nen in the Wash, is about 100 m. in length. From Yarmouth to Happisburgh, the coast is low and sandy; from Happisburgh to Weybourne, it is skirted by low cliffs; and w. of Weybourne to the entrance to the Wash, where the banks are in great part dry at low-water, and where a considerable extent of land has been reclaimed from the sea (see WASH), it is low, and covered with sand or shingle. The surface of the county is level, or nearly so. The principal rivers are the Ouse, the Yare, with its affluents the Wensum and the Waveney, and the Bure. Communication is supplied by the navigable rivers, and by the Great Eastern railway. The climate is affected by cold n.e. winds, in spring particularly; but the air is in general dry and healthful. The soil consists chiefly of light sands and loams, and comprises much land not naturally fertile, but made so by judicious management. The agriculture of the county is in an advanced condition, and all the usual crops are extensively grown; that of barley is especially celebrated. On half the acreage food is raised for cattle, and thus the necessary manure is supplied. Geese and turkeys are extensively reared for the London market. The county is divided into three parts, N., S., and W. Norfolk, each returning two members to the house of commons. Cap. Norwich. Pop. of county (1801) 273,371; (1821) 344,365; (1851) 442,714; (1871) 438,656; (1881) 444,749; (1891) 318,310; (1901) 318,438.

NORFOLK, *nawr'fok*: town in Litchfield co., Conn.; in the n.w. part of the state, 45 m. w.n.w. from Hartford, on the Connecticut Western railroad. It borders on Berkshire co., Mass.; and is in a hilly region famed for healthfulness of air, purity of water, and beauty of natural scenery. N. has in recent years become a summer resort. It has a savings-bank, good schools, and the Robins Academy, collegiate preparatory. A complete and beautiful library building, erected by private munificence, is for free public use, as is also a complete and costly gymnasium. The village green is adorned with an artistically wrought fountain. The town of N. includes the several villages of N., North, South, and West N. It has a silk-mill, and a manufactory of excellent underwear; but farming and dairying are the principal interests. Pop. (1890) 1,546; (1900) 1,614.

NORFOLK.

NORFOLK: independent city and port of entry of Va.; on the Elizabeth river, lat. $36^{\circ} 51'$ n., long. $76^{\circ} 19'$ w.; 17 m. by land, 33 m. by water, from the Atlantic Ocean, 8 m. above Hampton Roads, 88 m. s.e. of Richmond. Seven railroads furnish inland communication with all points, and there are regular lines of steamers to New York, Boston and Providence, Philadelphia, Baltimore, and Richmond. The city is also a point of landing for the Allan steamships from Liverpool, a large business is done with coastwise and river boats, and considerable freight is brought through the Dismal Swamp and the Albemarle and Chesapeake canals. Across the river, about one mile to the s.w., and connected with N. by a steam ferry, is the city of Portsmouth (pop. 14,000). The two places are so intimately associated in business interests as to be virtually one city, and they form the leading U. S. naval station. There is not much manufacturing, but the city has extensive commerce. It ranks third in the Union in cotton receipts, and second in export of cotton to Great Britain. In 1889 more than 500,000 bales were received, and over half of the quantity was exported. Small fruits, sweet potatoes, and garden vegetables are shipped in larger quantities to northern markets than from any other port. This is also the leading point of shipment for peanuts, about 1,500,000 bushels being distributed from here each year. The city is built on level ground, with wide but somewhat irregular streets, is lighted with gas, has a good supply of water, and a well equipped fire department. There are 28 churches, several academies and public schools, a Rom. Cath. theol. seminary; 3 daily, 10 weekly, and 2 monthly papers; and 3 national, 3 state, and 2 private banks, 3 savings banks, and 1 trust company. A chamber of commerce and a cotton exchange are maintained by the two cities of N. and Portsmouth in conjunction. Among public buildings are the custom-house, court-house, city hall, Masonic temple, and a military academy. The harbor is large and safe, and is defended by Fort Calhoun and Fortress Monroe (q.v.); the latter is considered the strongest defensive work in the country. At the navy-yard, near by, there are two dry docks; the larger, completed 1889, holds 8000,000 gallons of water, and cost nearly \$500,000.—The first settlement at N. was made 1705. St. Paul's Church, still standing, was built 1739 of brick brought from Holland. A cannon ball fired during the bombardment of the city by the British 1776 still remains in one of the walls, but the communion service was seized and taken to England. Nearly every other building in the place was destroyed. A city charter was obtained 1845. The exports from N., including Portsmouth, 1884-5 were valued at \$10,341,403. Pop. (1880) 21,966; (1890) 34,871; (1900) 46,624.

NORFOLK, DUKE OF: see HOWARD, HOUSE OF.

NORFOLK—NORMAL.

NORFOLK ISLAND: in the Pacific Ocean, 1,100 m. e.n.e. of Sydney in Australia, lat. $29^{\circ} 10' \text{ s.}$, long. $167^{\circ} 58' \text{ e.}$; length, about 6 m.; breadth, $2\frac{1}{2}$ m.; 8,607 acres. It is the largest of a small cluster of islands, comprising N., Nepean, and Philip Islands, with several rocky islets. The coasts are high and steep, so that landing is impossible except at two places, and not very safe there; and the surface generally is uneven, with average of 400 ft. above sea-level, and rising in Mt. Pitt above 1,000 ft. The soil is fertile and well watered, and the climate healthful. In 1825, N. I. was made a penal settlement by the British govt. for the worst class of convicts sent out to New South Wales; but the experiment was a failure, and the establishment was broken up 1855. In a mission school founded by Bp. Patteson 150 Melanesian youth are taught. In 1856 the inhabitants of Pitcairn Island (q.v.)—194 in number, descendants of the mutineers of the *Bounty*—were transferred hither by the British govt. Total pop. (1831) 431, of which the Pitcairn community 297; (1888) 741.

NORIC ALPS: see ALPS.

NORICUM, *nōr'ī-kūm*: one of the provinces of the old Roman empire, lying s. of the Danube, occupying a large part of the area of the modern divisions of Styria, Upper and Lower Austria, Carinthia, and smaller portions of Carniola, Salzburg, and Bavaria. When conquered by the Romans, in the reign of Augustus, its only large town was Noreia, but under its new rulers the province increased largely in population and several towns were established. In the Noric Alps a good quality of iron was mined, it is said that gold was found, and the province was a great centre of European trade.

NORIUM, *nō'rī-ūm*: name assigned by Svanberg to a metal, whose earth (or oxide) is associated with zirconia in certain varieties of the mineral zircon. Its existence is not definitely established.

NORMAL, a. *nōr'māl* [F. *normal*—from L. *normālis*—from L. *norma*, a square or rule]: according to established rule or law; ordinary; obeying what is believed to be the natural law; perpendicular; natural form or structure; teaching first rules and principles: thence, instructing in the art of teaching: N. the perpendicular to a curve at some particular point, being also the perpendicular to a tangent. **NOR'MALLY**, ad. -*lī*.

NORMAL SCHOOL.

NORMAL SCHOOL, *norm'al*: institution where teachers are instructed in the principles of their profession and trained in the practice of it. The name is of French origin [*École Normale*, from Lat. *norma*, a rule or model], and is generally used in Scotland: such institutions, in England, are oftener called 'Training Colleges;' in Germany 'Seminaries.' In the United States the usual name is N. S. That in acquiring knowledge the mind follows certain processes, and that any one imparting knowledge should work in harmony with these processes, seem obvious truths; yet only recently have they secured much attention; and they are even at this day deliberately denied by some men of thought, and of high educational position, who deny that educational processes are universally the same, or can be certainly known, and who ascribe to the N. S. system the forced development of mechanical methods of teaching. The recognition of the desirableness of these institutions has, however, been sufficiently extensive to secure their establishment in Great Britain, America, France, Germany, and Switzerland; and Italy, and even Russia, are following the example of the countries named. These schools afford also a thorough course of instruction in the subjects taught in elementary schools. The only N. S. for training the highest class of teachers for colleges and academies is in Paris.

One of the earliest, if not the earliest, N. S. in Great Britain was the Sessional School of Edinburgh (1830), afterward developed into the 'General Assembly's Normal Institution.' The first attempt in England was Battersea Training College, instituted by Mr., afterward Sir J. P. K. Shuttleworth, and Mr. Tufnell. Sir J. P. K. Shuttleworth subsequently, as sec. to the committee of privy council on education, suggested measures which resulted in the institution of about 50 colleges for training of teachers in connection with the Established and Dissenting Churches, in which, after two years' course training, young men and women receive government certificates of merit and become teachers of elementary schools.

Near the beginning of the present century, De Witt Clinton recommended the founding of teachers' seminaries in the state of New York. In 1834 a Saturday normal school was held in New York. In 1835 the Rev. Charles Brooks, of Hingham, Mass., having visited the Prussian schools, began to agitate the subject, and the result was a convention at Hanover, Mass., 1838, Sep. 3, Daniel Webster, John Quincy Adams, and other eminent men taking part in the discussion. The same year, a gift of \$10,000 by the Hon. Edmund Dwight led the Mass. board of education to vote three normal schools, of which the first was opened at Lexington, Mass., 1839, with Cyrus Pierce as principal, but afterward removed to Framingham. The second was established the same year at Barre, and the third at Bridgewater—the second removed subsequently to Westfield. The first building

NORMAN—NORMAN ARCHITECTURE.

bought for a normal school was at West Newton, Mass., Josiah Quincy giving the \$1,500 necessary, at the instance of Horace Mann; the first building erected for the purpose was at Bridgewater, Mass. The state normal school at Albany, N. Y., was opened 1844, Dec., David P. Page, principal. A city normal school was established in Philadelphia, 1848; New Britain, Conn., and Ypsilanti, Mich., 1849; Bristol, R. I., 1852; Salem, Mass., 1853; Iowa City, Io., 1855; Trenton and Beverly, N. J., 1855-56; Indianapolis, and a state institution in Ill., and a school at Charleston, S. C., 1857; at Oswego, N. Y., 1861; at Madison, Wis., and San Francisco, 1862; three in Penn., at Millersville, 1859, Edinboro, 1860, and Mansfield, 1862; at Farmington and Castine, Me., and Emporia, Kan., 1864; Baltimore, Md., 1865; Brockport, N. Y., Platteville, White-water, and Oshkosh, Wis., Kutztown, Penn., 1866; Randolph, Johnson, and Castleton, Vt., Peru, Neb., Terre Haute, Ind., Guyandott and West Liberty, W. Va., 1867.—In 1889 there were 135 public and 41 private normal schools, with 23,853 students. There are 32 city schools of this character, and a step higher has been taken in the founding of normal colleges, with a more extensive curriculum. The New York city school has 38 regular teachers, and 27 teachers in its model school. The graduates of the normal schools furnish about 4 per cent. of the whole number of teachers in the United States. 'In comparison with an ideal,' writes Francis W. Parker, 'the normal schools of this country are very crude, necessarily so, for the opposition to them has been long and bitter. The state normal schools are, at the best, good academies, with the addition of some slight theoretical knowledge and practical skill. The great inducement offered to legislators for the founding of state normal schools, was that the children of farmers would have good high school advantages. The city training school is in some respects a marked improvement upon the state normal school. The Boston N. S. is probably the best city training school in America. Applicants for admission into this school, must have had a full four years' course in the high school, and in addition must be specially recommended by the principal of the high school from which the applicant graduates, as a promising candidate for professional training. The old pupil-teacher plan, that grew out of the Lancastrian, or monitorial, system of teaching (see BELL, ANDREW) is now generally rejected as inefficient.'

NORMAN, a. *nôr'măn* [F. *Normand*; OF. *Norman*; Icel. *Nordmadr*]: pertaining to Normandy, in France, or to the anc. Normans of Scandinavia: N. a native of Normandy: also, a Norwegian; a Northman.

NORMAN ARCHITECTURE: variety of the Romanesque style, originated and used chiefly by the Normans, and introduced into England by William the Conqueror. Soon after the Norman conquest of n. France, they began to erect churches and cathedrals in memory of their victories. Their conquests supplied them with the means

NORMAN ARCHITECTURE.

for making these large edifices. Not content with the small churches then common in France, they desired monuments worthy of their great conquests. They accordingly expanded the dimensions, while to a great extent retaining the style of the buildings that they found in France. They seem also to have borrowed some of their ideas from the Rhine. See GOTHIC ARCHITECTURE.

The leading characteristics of their style were size and massiveness. They adopted the old Latin plan (derived from the Basilica) of a central portion with aisles at the sides; and at the e. end, they invariably placed a semicircular apse. They seized on the tower as a distinguishing feature, and developed it as their style progressed. The ornaments are simple and of great variety; but the most common and distinctive are the zigzag, billet, chevron, nail-head, etc. The windows and doors are simple, with semicircular arched heads—the former without tracery. The tympanum of the door-arch is occasionally filled with sculpture.

The nave arches are carried sometimes on single pillars, but more frequently, especially in later periods, on piers with shafts. The shafts are almost always recessed in nooks (or 'nook-shafts'). Owing to the great size of the buildings, the architects were unable at first to vault the main central portion, which, accordingly, had usually a wooden roof, the aisles only being vaulted.

The masonry is rude; the joints being large, and the stones generally unhewn. The style prevailed from about the beginning of the 10th c. till the death of William the Conqueror, near the end of the 11th c. There are many examples in Normandy, the churches at Caen being well-known buildings of the date of William.

This style of architecture was brought into England by the Normans at the Conquest, 1066. They there extended the scale of the buildings, as they had done in Normandy, preserving, however, many local peculiarities of the Saxon style, which they found in the country. The chapel in the White Tower of the Tower of London is the earliest example of pure Norman work in England. There are, however, many buildings, both in England and in Scotland, which date from before the end of the 12th c., when the pointed style began to be used. Durham, Lindisfarne, Canterbury, Dunfermline, are partially Norman, besides many other churches and castles. The Anglo-Norman is heavier than the French-Norman, the cylindrical nave piers of the above-named buildings being much more massive than those of French works. To relieve this heaviness, the chevron, spiral, and other groovings were cut in the piers. The moldings and forms of doors, windows, etc., are the same as those of Normandy. There is one remarkable difference in the plans of the early Norman churches in the two countries: in France, the apse at the e. end is always semicircular; in England, this form was gradually given up; and toward the last, the square e. end was universally adopted.

NORMANDY.

NORMANDY, *nawr'man-di* (Fr. *Normandie*): formerly a province in n. France, bordering on the English Channel; now divided into the depts. of Seine-Inférieure, Eure, Orne, Calvados, and Manche. It is in general a very fertile, richly cultivated land, resembling a garden in many districts. Its chief agricultural products are corn, flax, and fruits (from which cider is largely made); its fisheries and manufactures of great importance, and its horses the best in the kingdom. The inhabitants mostly are descendants of the old Normans, and bear the stamp of their splendid ancestry. They are strongly built, and of intelligent, noble, and energetic character; warm-hearted and patriotic, they produce the boldest sailors, the most skilful fishermen, agriculturists, cattle-rearers, and gardeners in all France. In the n.e. and more level part (formerly *Upper Normandy*), the principal towns are Rouen, Dieppe, Havre-de-Grace, Harfleur, Honfleur, Lisieux, Evreux, Yvetot; in the s.w. and hilly part (*Lower Normandy*), the principal towns are Caen, Falaise, St.-Lô, Bayeux, Coutances, Avranches, Granville, Alençon, Cherbourg, and Mont-St.-Michel. Rouen, the ecclesiastical metropolis, was always the chief city of the duchy of N.

In the time of the Romans, the country bore the name *Gallia Lugdunensis II.* Under the Frankish monarchs it formed a part of Neustria, and was called N., first, after Charles the Simple, 912, had given it to Rolf or Rollo, leader of a band of Norse rovers (see **NORMANS**), to be held by him and his posterity as a fief of the French crown. From Rolf (baptized into Christianity under the name Robert) and Gisela, daughter of Charles, sprang the later dukes of N., of whom Richard I., grandson of Rolf, vigorously maintained his authority against his liege lords, Louis IV. and Lothaire. William II., son of Robert II., became Duke of N. 1033; and 1036 established a Norman dynasty on the throne of England (see **WILLIAM THE CONQUEROR**), thereby politically uniting N. with England. In 1077 his eldest son, Robert, wrested N. from him; but it was again united to England under Henry I. 1105. With this monarch, Rolf's male line became extinct. Henry II., son of Henry I.'s daughter, Matilda, after the death of Stephen of Blois, obtained 1154 the govt. of England and N.; but in the reign of his son, John Lackland, it was conquered by Philippe Auguste (1203-4). It remained a portion of the French monarchy more than 200 years; but after the battle of Agincourt (1415) it was reconquered by the English, who held it till 1449, when it was finally wrested from them by Charles VII. The name N. has long passed out of formal use, except that the abp. of Rouen still keeps the title Primate of N. See Liquez's *Histoire de la Normandie* (1835); Palgrave's *History of N. and of England* (1851-64).

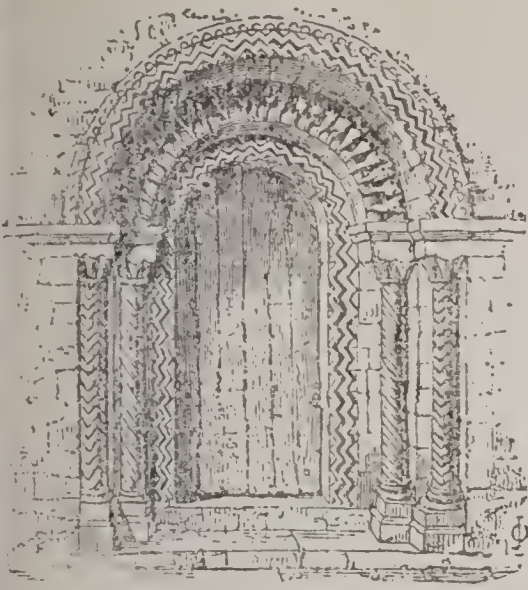
NORMANDY.

NORMANDY, CUSTOMARY LAW OF (Fr. *Coutumier de Normandie*): one of the systems of laws according to which principally the ancient provinces of France were governed. These systems were called *Coutumes* (customs): they had originated in local usages, and been in the course of time reduced to writing and formally sanctioned by the sovereign. *Coutume* was distinguished both from *loi*, which originated with the king, and from *us*, or usage not reduced to writing. Of the codes of customary law, one of the oldest and most famous was the *Coutumier de Normandie*. It was divided into the ancient and modern custom. The former was reduced to a written form first in 1229, under St. Louis; the latter was the ancient *coutumier*, modified and reformed 1585 by commissioners appointed by Henry III., with the concurrence of the three estates of the nobility, clergy, and people of Normandy. The ancient *coutumier* treats principally of the duties of judicial officers, proceedings in the different courts, and the rights and obligations of kings of France, dukes of Normandy, feudal lords, and the people. In the modern *coutumier* are minute regulations regarding the transmission of property by will and inheritance. Each of the 22 vicomtés into which N. was divided had a different mode of devising real property. The law by which the Channel Islands are still governed is based on the customary law of Normandy. The chief judge in Jersey, Guernsey, and Alderney retains the Norman name of *bailli* or *bailiff*, and his authority is much the same as that officer possessed under the Norman law. One of the most remarkable remnants of the *coutumier* still subsisting in the Channel Islands is the *Clameur de Haro*. Any one who considers that his rights of property are infringed protests in the presence of two witnesses, and, calling out three times 'Haro' (said to be a way of invoking Duke Rollo, noted for his justice), summons the trespasser to desist. He then applies to the authorities, relating what he has done, and proceeds to the record office, where note is taken of the circumstances; all which ceremonial must be gone through before bringing an action of trespass. The decision is generally referred to *une rue de justice*, and the losing party is subjected to a fine and liable in costs: he had formerly also to undergo *un regard de château*, or 24 hours' imprisonment, for having implored the aid of the prince without cause.

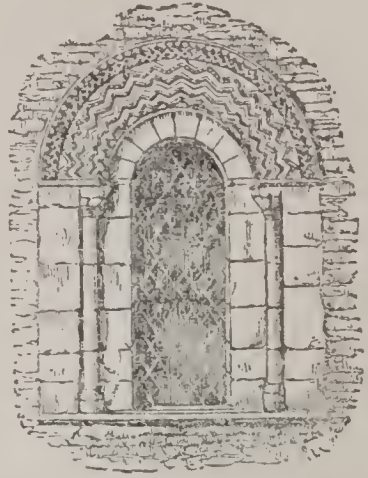
NORMANS.

NORMANS, *nawr'manz* (i.e., Northmen): name generally limited in its application to those sea rovers who established themselves in that part of France called, after them, Normandy; but sometimes embracing also the early inhabitants of Norway. During the middle ages, the name Northmen, or Norsemen, was often used in a broader sense, to denote the entire population of Scandinavia, and still more frequently, perhaps, to designate the Danes and Norwegians, exclusive of the Swedes. The Germans and French called the piratical hordes who ravaged their shores Normans or Northmen; the Saxons called them usually Danes or Eastmen. They were distinguished also by the latter as *Mark-* or *Marehmen* (from *Den-mark*), as *Ask-men* (i.e., men of the *ashen-ships*), and as the *Heathen*. The primary cause of the plundering expeditions southward and westward across the seas, undertaken by the Norse Vikings (*Vikingar*, meaning dwellers on the *vics*, i.e., bays or fiords), as they called themselves, under leaders who took the name of 'Sea Kings,' was doubtless the overpopulation and consequent scarcity of food in their native homes; besides, the relish for a life of warlike adventure, conjoined with the hope of rich booty, strongly attracted them; while—at least as long as the old Scandinavian religion lasted (i.e., till about the end of the 10th c.)—death in battle was not a thing to be dreaded, for the slain hero passed into a region in which he was provided with the fierce rapture of eternal strife in the Walhalla of Odin. Finally, discontent with the ever-increasing power of the greater chiefs or kings induced many of the nobles, with their followers, to seek new homes.

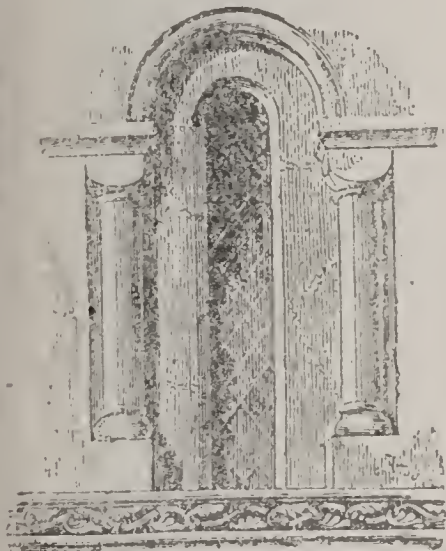
The first Danish Norsemen made their appearance on the e. and s. coasts of England 787. After 832, their invasions were repeated almost every year. To one of these belongs the *legend* of Ragnar Lodbrok (i.e., Ragnar of the 'Shaggy Brogues'), who is said to have been taken prisoner by Ella, king of Northumbria, and thrown into a dungeon filled with vipers, where, while expiring amid horrible torments, he sang with heroic exultation the story of his life. The very existence, however, of such a person as Ragnar Lodbrok is questioned by many Scandinavian scholars. In 851, the Norsemen wintered for the first time in the island, and after 866 obtained firm footing there. The Anglo-Saxon Ethelred I. fell in battle against them 871. His brother Alfred, known as Alfred the Great (q.v.), after a long and doubtful struggle, partially reduced them to subjection; nevertheless, he was compelled to leave them in possession of Northumbria and East Anglia; and had not only to defend himself against a new and fierce invasion led by the famous rover Hastings (q.v.), but, like his immediate successors, to contend against the revolts of his Dano-Norman subjects. A period of external peace now ensued; but in 991 the invasions of the Danes and Norwegians began anew. The Saxon king, Ethelred II., at first sought to buy them off by paying a sort of tribute-money, called



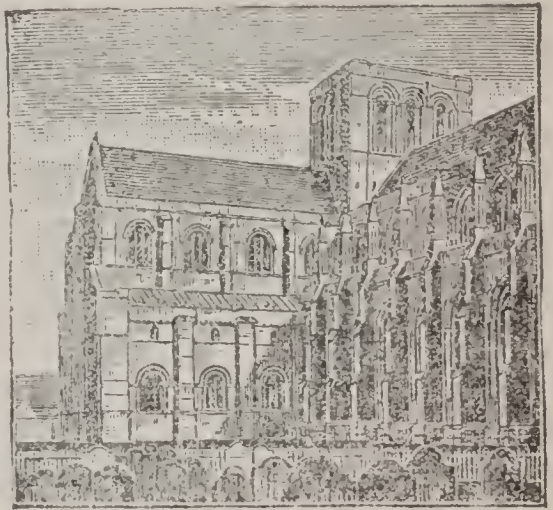
Norman Doorway. Earls Barton,
Norway.



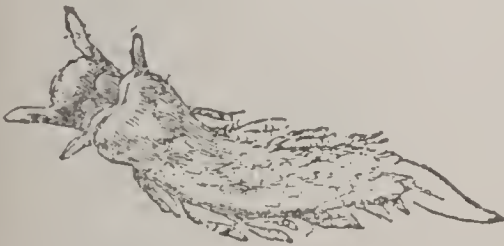
Norman Molding.



Norman Window. Steetley,
Derbysire.



Winchester Cathedral. Norman
Transept and Tower.



Nudibranchiata.—*Eolis olivacea*.



Notornis.

Danegelt (q.v.); but the massacre of the Danes living in England, by command of Ethelred, 1002, Nov. 13, was avenged by four expeditions under the Danish king, Swen, who frightfully wasted the country, and finally conquered it 1013, dying the following year. His son Knut, or Canute (q.v.), after carrying on a struggle for the supreme power with Ethelred and his successor, Edmund Ironside (q.v.), at length, on the death of the latter, became sole monarch of England, which now remained under Danish or Norse rulers till 1042. The government of the country then reverted into the Saxon hands of Edward the Confessor (q.v.), who was succeeded 1033 by Harold II. (q.v.), son of the powerful Godwine, Earl of Wessex (q.v.); but in Oct. of the same year, Harold lost his life and crown at the battle of Hastings; and William the Conqueror, descendant of a Norwegian chief who had settled in Normandy, once more established a Norse dynasty on the throne of England, but one greatly refined and improved by long residence in a comparatively civilized region.

Danish Norsemen were they also, in particular, who ravaged the w. coasts of the European mainland, from the Elbe to the Gironne. As early as 810, the Danish king, Gottfried, had overrun Friesland; but the power of Charlemagne was too much for these undisciplined barbarians, and they were overawed and subdued for a time. Soon after his death, however, they recommenced (about 820) their piratical expeditions, and, favored by the weaknesses and dissensions of the Carolingian rulers, became, during the 9th c., the terror and scourge of n.w. Germany and France. They plundered Hamburg several times, ravaged the coasts of the Frisians (which then extended as far as the Scheldt), and 843 firmly planted themselves at the mouth of the Loire. But ere long they ceased to be satisfied with making descents and settlements on the coasts, and in their small piratical craft they swarmed up the great rivers into the interior of the country, which they devastated far and wide. Thus, 845, they ascended the Seine and plundered Paris—an exploit frequently repeated. In 885 not less than 40,000 of these Vikings are said to have ascended the river from Rouen, under the leadership of one Siegfried, in 700 vessels, and besieged the capital for ten months. It was saved at the expense of Burgundy, which was abandoned to their ravages. In 881, Louis or Ludwig III., king of the West Franks, inflicted a severe defeat on the invaders at Vimeu, near Abbeville in Picardy, the memory of which has been preserved in a song still popular among the country-people; but neither that, nor the repulse which they sustained from the brave German monarch Arnulf, near Louvain, 891, could hinder them from fresh irruptions. In 892 they appeared before Bonn, and tradition says that bands of Danish rovers penetrated even into Switzerland, and established themselves in the canton of Schweiz and the vale of Hasli. From their settlements in Aquitania they

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proceeded at an early period to Spain, plundered the coasts of Galicia 844, and subsequently landed in Andalusia, but were defeated near Seville by the Moorish prince Abd-ur-Rahman. During 859-860, they forced their way into the Mediterranean, laid waste the shores of Spain, Africa, and the Balearic Isles, penetrated up the Rhone as far as Valence; then turning their piratical prows in the direction of Italy, entered the Tyrrhene Sea, burned Pisa and Lucca, and actually touched the distant isles of Greece before their passion for destruction was satiated, or before they dreamed of returning west.

Doubtless Norwegian rovers also took part in these so-called Danish expeditions. We know that as early as the beginning of the 9th c. they made voyages to n. Ireland, Scotland, the Hebrides, the Orkney and Shetland Isles; and the increasing power of Harald Haarfager, in the 9th and 10th c., exciting discontent among the smaller chiefs, great emigrations took place, and these islands became the new homes of these Norwegian Vikings. About the same period, colonies were settled in the Farøe Isles and Iceland, from which some Vikings proceeded westward across the north Atlantic to Greenland 982, and thence, 1002, s. to a region which they called *Vinland*, now universally believed to be the coast of New England, thus anticipating by nearly 500 years the discovery of America by Columbus. From Norway also issued the last and most important expedition against the coast of France, led by Rolf or Rollo, who had been banished by Harald Haarfager on account of his piracies. Rolf forced Charles the Simple to grant him possession of all the land in the valley of the Seine, from the Epte and Eure to the sea. By the time of Charles the Bald, the invaders had firmly planted themselves in the country, which then went by the name of Normandy (q.v.). These and their descendants are, strictly speaking, the *Normans* of history—warlike, vigorous, a brilliant race. They rapidly adopted the more civilized form of life that prevailed in the Frankish kingdom—its religion, language, and manners—but inspired everything that they received with their own abundant vitality. At a later period (12th c.), they even developed a great school of narrative poetry, whose cultivators, the *Trouveurs* or *Trouvères*, rivalled in celebrity the lyrical Troubadours of s. France (see TROUVÈRE: FRENCH LANGUAGE AND LITERATURE). Their conquest of England, 1066, gave that country an energetic race of kings and nobles, on the whole well fit to rule a brave, sturdy, but somewhat torpid people like the Anglo-Saxons. But though the Normans had acquired comparatively settled habits in France, the old passion for adventure was still strong in their blood; and in the course of the 11th c., many nobles, with their followers, betook themselves to s. Italy, where the strifes of the native princes, Greeks and Arabs, opened a fine prospect for ambitious designs. In 1059, Robert Guiscard, one of the ten sons of the Norman count, Tancred de

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Hauteville, all of whom had gone thither, was recognized by Pope Nicholas II. as Duke of Apulia and Calabria, and in 1071 as lord of all Lower Italy. His brother and liegeman, Roger, conquered Sicily 1060-89. Roger II. of Sicily united the two dominions 1127; but in the person of his grandson, William II., the Norman dynasty became extinct, and the kingdom passed into the hands of the Hohenstauffen family.

The Swedish Norsemen directed their expeditions chiefly against the e. coasts of the Baltic—Courland, Esthonia, and Finland, where they made their appearance in the 9th c.—the very time when their Danish and Norwegian brethren were roving over the North Sea, the English Channel, the Bay of Biscay, and were establishing themselves on the shores of England and France. According to the narrative of the Russian annalist, Nestor, they appear to have penetrated into the interior as far as Novgorod, whence they were quickly banished by the native Slavic and Finnish inhabitants, but were as quickly solicited to return and assume the reins of government. Hither, consequently, 862, accompanied by other noted warriors, came three Swedish chiefs, Rurik, Sineus, and Truwor, sons of the same father, belonging to the tribe of *Ros* (whence *Russ* and *Russians*). Rurik founded one kingdom at Novgorod, which stretched northward as far as the White Sea. His successor, Oleg, united with that a second established by other Swedish adventurers at Kiev, which town now became cap. of the wide-extended Russo-Swedish kingdom: see *RUSSIA*. For a long period these Norsemen, who, it appears, became completely identified with their Slavic-speaking subjects in the 10th c., were dangerous enemies of the Byzantine empire, whose coasts they reached by way of the Black Sea, and whose capital, Constantinople, they frequently menaced, e.g. 941, when Igor is said to have appeared before the city with more than 1,000 ships or boats. Earlier in the same century, these Swedo-Russian warriors had found their way into the Caspian Sea, and actually penetrated to the coasts of Tartary and Persia. Partly from them, and partly from native Scandinavians, came those soldiers who from the 9th to the 12th c. formed the body-guard of the Byzantine emperors.—See Deppings's *Histoire des Expéditions Maritimes des Normands et de leur Etablissement en France au 10^{me} Siècle* (2 vols. 2d edit. 1843); Wheaton's *History of the Northmen from the Earliest Times to the Conquest of England* (1831); Worsaae's *Minder om de Danske og Normændene i England, Skotland, og Irland* (1851); Freeman's *History of the Norman Conquest* (1867-76).

NORNS—NORRISTOWN.

NORNS, n. plu. *nörn*z, or **NORNAS**, n. *nör'näs*, or **NORNÆ** [Icel. *norn*]: in *Scand. myth.*, the three Fates, the *Parcæ* of the north, three young women, by name Urd, Verdandi, and Skuld, i.e. The Past, The Present, The Future. They sit by the Urdar-well under the world-tree Yggdrasil, and there determine the fate both of gods and of men. Every day they draw water from the spring, and with it and the clay that lies around the wells, sprinkle the ash-tree Yggdrasil, that its branches may not rot and wither away. Besides these three great norns, there are many inferior ones, good and bad; for, says the Prose Edda, when a man is born there is a norn to determine his fate; and the same authority tells us that the unequal destinies of men in the world are attributable to the different dispositions of the norns. These lesser norns corresponded to the *genii* of classic mythology. Women who possessed the power of prediction or magic also bore this name.

NORRISTOWN, *nör'is-town*: borough, and cap. of Montgomery co., Penn.; on the e. bank of the Schuylkill river, along which it extends two miles; on the Philadelphia and Reading, the Schuylkill Valley, and the Stony Creek railroads about 16 m. n. w. of Philadelphia, 41 m. from Reading. It is on hilly ground, the most elevated parts 200 ft. above the river. The town is well laid out, and, except in the outskirts, most of the buildings are of brick or stone. The streets are macadamized, there are two lines of street railroad, gas and electricity are used for lighting, and an abundant supply of water is obtained from the Schuylkill and distributed from an immense reservoir 194 ft. above the level of the river. There are 19 churches, good schools and a seminary, 2 libraries, one having 6,000 vols., 2 opera houses; and 3 daily and 8 weekly papers, one of the latter being devoted to law, and one printed in German. There is an active board of trade, telegraph and telephone facilities, 3 national banks, 2 trust and safe deposit companies, several building and loan associations, and a large number of beneficial societies. The court-house, a fine marble structure built 1854, cost \$150,000. One of the state hospitals for the insane, with 20 buildings, and accommodations for 1,600 patients, is in the n. part of the town. There are more than 80 manufacturing establishments, which employ a total of 3,500 hands. Among articles made are cotton and woolen goods, carpets, shirts, hosiery, nails, tacks, glass ware, and bricks. There are also flour-mills, and several blast furnaces and rolling-mills. Three bridges across the Schuylkill lead to the borough of Bridgeport on the other bank. N. was named for Isaac Norris, who bought from William Penn the land on which it is built. It was incorporated 1812, enlarged 1853. Pop. (1870) 10,753; (1887) 18,736; (1890) 19,791; (1900) 22,265.

NORRKÖPING—NORTH.

NORRKÖPING, *nör'chö-pīng*: first manufacturing town of Sweden after Stockholm; chief town of Linköping-Län, E. Gottland; at the junction of the Motala with the Gulf of Bravike, 58° 30' n. lat., 16° 15' e. long. It is a fine well-built town, with broad streets, large squares, and numerous churches and charitable institutions. The rapid river Motala, spanned by several substantial bridges and lined with commodious wharfs, affords large water-power, by which numerous systems of machinery are worked. The manufactures are cloths, stockings, starch, tobacco, soap, etc., while in the neighborhood are the extensive ironworks and cannon foundries of Finspång. N. is called sometimes the Manchester of Scanlinavia. Pop. (1880) 26,735; (1890) 32,823.

NORROY, n. *nör'roy* [F. *nord*, north; *roi*, a king]: the title of the third of the three kings-at-arms, whose jurisdiction lies to the north of the Trent; the other two are Garter and Clarencieux.

NORSE, n. *nörs* [F. *Norse*, the anc. language of the Faröe, Orkney, and Shetland islands: Icel. *Norskr*, Norse]: the language of anc. Scandinavia, including Norway and Sweden, the Faröe, Orkney, and Shetland islands. **NORSEMAN**, n. *nörs'män*, an inhabitant of anc. Scandinavia; a Northman.

NORSE LANGUAGE: see SCANDINAVIAN LANGUAGE.

NORSE'MEN, or **NORTH'MEN**: see NORMANS.

NORSE MYTHOL'OGY: see SCANDINAVIAN MYTHOL'OGY.

NORTES, n. plu. *nörts* [Sp. *norte*, the north, the arctic pole]: the *northers* or cold dry winds, frequently prevailing from Sep. to March in the regions bordering on the Gulf of Mexico.

NORTH, n. *nörth* [Icel. *nordr*; Dut. *noord*; Ger. *nord*; F. *nord*, the north]: one of the four cardinal points; the parts lying toward the north pole of the earth; the direction toward the north pole—in the northern hemisphere, the direction opposite the sun at noon—in the southern, the parts in the direction of the sun at noon: **ADJ.** being in or belonging to the north. **NORTH STAR**, the star always seen in the north; the pole-star or polar star. **NORTH WIND**, the cold wind that blows from the north in the northern hemisphere—a warm wind of the southern hemisphere. **NORTHEAST**, n. *-ēst'*, the direction between the north and the east: **ADJ.** pertaining to the northeast, or coming from that point. **NORTHEASTER**, n., wind blowing from the northeast; a northeasterly gale: in *numismatics*, name given to the silver shillings and sixpences coined in New England in the reign of Charles I., from the letters N. E. (New England) stamped on one side. **NORTHEAST'ERLY**, a. *-ēst'ér-lī*. **NORTHEAST'ERN**, a. *-ēst'érn*, in a direction to the northeast. **NORTHERLY**, a. *nörth'ér-lī*, lying or looking toward the north; coming from the north: **AD.** from the north, or toward it. **NORTHERN**, a. *nörth'érn*, lying toward the

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north or in that direction. **NORTHERN LIGHTS**, a name for the streamers or aurora borealis, as they appear in the north. **NORTHERNMOST**, a. situated at the point farthest north. **NORTHING**, n. *nōr'h'ing*, tenancy or distance northward—applied to a planet; difference of latitude made by a ship in sailing northward. **NORTH'MAN**, n. one from the north; an anc. Scandinavian (see **NORMANS**). **NORTH'WARD**, a. *-wērd*, being in the direction of the north. **NORTH'WARD**, or **NORTH'WARDS**, ad. *-wērdz*, or **NORTH'WARDLY**, ad. *-lī*, in a northern direction. **NORTH-WEST**, n. *nōrth-wēst'* or *nōr-wēst'*, the point between the north and west: **ADJ.** pertaining to the point between north and west. **NORTHWEST'ERN**, a. *-wēst'ēr'n*, in the direction of the point between north and west. **NORTHWEST'ERLY**, a. *-lī*, toward the northwest; from the northwest. **NORTH POLE**, the northern extremity of the earth's axis. **NORTH POLE OF THE HEAVENS**, that pole of the heavens toward which the north pole of the earth is directed. **NORTH FRIGID ZONE**, the zone or belt of the earth which is contained between the north pole and the arctic circle. **NORTH TEMPERATE ZONE**, the zone of the earth contained between the tropic of cancer and the arctic circle. **NORTHWEST PASSAGE**, a passage for ships from the Atlantic Ocean into the Pacific, or the reverse, long sought (see **NORTHEAST AND NORTHWEST PASSAGES**). **NORTHERN HEMISPHERE**, hemisphere of the earth to the north of the equator. **NORTHERN DRIFT**, the glacial drift or erratic boulder-group, so called because the materials seem to have been brought by polar currents from the north, or because found only in the more northern countries.

NORTH, CHRISTOPHER (pseudonym): see **WILSON, JOHN**.

NORTH, FREDERIC, Lord, second Earl of Guilford: English prime-minister: 1732, Apr. 13—1792, Aug. 5. He was educated at Eton, and at Trinity College, Oxford. His father, Baron Guilford, descendant of Roger, Baron North (*temp.* Henry VIII.), was created an earl 1752. N. entered the house of commons at an early age, was made a lord of the treasury 1733, and inherited the tory politics which, in the days of Charles II., had placed his ancestor in the highest ranks of the law and the state. It was his boast in the house of commons, that 'since he had had a seat there he had voted against all popular, and in favor of all unpopular measures.' On the death of Charles Townshend, 1769, he was made chancellor of the exchequer and leader of the house of commons, a post for which he was well qualified by his eloquence, good humor, wit, and readiness of resource. His folly was, however, one of the immediate causes of the American War of Revolution. Earl Russell, in *Life and Times of C. J. Fox*, says that 'for £100,000 a year of revenue George Grenville provoked America, and that for £16,000 a year of revenue Lord North lost America.' In 1770 he succeeded the Duke of Grafton as prime-

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minister. As a minister he was too ready to surrender his own judgment to that of George III., who, with a narrower understanding, had a stronger will, and was determined to subdue America. N. was called by Horace Walpole the ostensible minister; the real minister was the king. N. had to encounter an ardent and powerful opposition, led by Charles James Fox and supported by Burke. It has since been proved that N. 'so early as 1776 was of opinion that the system he was pursuing would end in ruin to the king and to the country.' In 1778, he renounced the right of taxing the colonies. In 1782, it being impossible to carry on the war with America any longer, N. resigned. 'A more amiable man never lived,' says Earl Russell; 'a worse minister never since the Revolution governed this country.' With N.'s retirement came to an end George III.'s scheme of governing the country by his own will, and ruling the house of commons by court favor and thinly disguised corruption. N. was succeeded by the Marquis of Rockingham, on whose death Lord Shelburne became premier. Fox's dislike of the terms of peace with America led him to enter into a coalition with N., whom he had for so many years inveighed against as a minister without foresight, treacherous, vacillating, and incapable. N. and Fox took office under the Duke of Portland 1783, but the coalition destroyed Fox's popularity, and the Portland administration lasted only a few months. N. was afflicted by blindness during the last five years of his life. He succeeded to the earldom of Guilford, 1790, on the death of his father; but has continued to be generally known by his courtesy-title, Lord North.

NORTH RIVER: see HUDSON RIVER.

NORTH, WILLIAM: soldier: 1755-1836, Jan. 3; b. Fort Frederick, Me., son of John N., commander of Fort Frederick 1751, and Fort St. George, Thomaston, Me., 1758. William entered the American army 1775; served under Benedict Arnold in the Canadian expedition of the same year; 1777, May, was appointed capt. in a Mass. regt., and took part in the battle of Monmouth; 1779 was aide-de-camp to Baron Steuben, whom he aided to introduce his disciplinary system into the Amer. army; received congressional appointment as maj. 2d U. S. regt. 1786, Oct. 20; became adjt.gen. of U. S. army 1798, July 19. ranking as brig.gen.; was mustered out 1800, June 10. Meanwhile he served as speaker of the N. Y. assembly and entered the U. S. senate as federalist, serving 1789, May 21-1799, Mar. 3. Baron Steuben bequeathed most of his property to Gen. N., who shared it with his military companions. He married Mary, daughter of Judge James Duane. He belonged to the Soc. of the Cincinnati. He died in New York.

NORTH ADAMS--NORTHAMPTON.

NORTH ADAMS, a city (incorporated 1895), Berkshire co., Mass.; on the Hoosac river, about 35 m. e. of Albany, 20 m. n.e. of Pittsfield; on the Troy and Boston railroad, at the n. terminus of the Pittsfield and North Adams railroad. It is near the entrance of the Hoosac tunnel, which is 5 m. long, cut through the Hoosac Mountain, and forming part of a railroad connecting Boston with Troy and Albany. The scenery around N. A. is very fine. The town is surrounded by high hills, Greylock, 3,600 ft., highest mountain in the state, lying 5 m. to the s.w. There are 7 churches, 3 banks, 2 newspaper offices, a fine high school, and a first-class hotel besides important manufactures of cotton and woolen goods, boots, shoes, etc. The city had (1900) 231 manufacturing establishments, employing \$14,563,492 capital and 6,796 persons, yielding products val. at \$11,682,663. The prosperity of the place is due to its various mills. Much attention was drawn to it a few years ago by the experiment of introducing Chinese labor into the factories. There are several points of interest to the geologist in the vicinity of N. A. About a mile e. of the village, Hudson's brook is arched over for a considerable distance by a romantic cave 30 to 60 ft. high. The marble of the cave is too soft for the general purposes of trade, and has been worn into fantastic shapes by the action of the water. Hawthorne gives a fine description of the spot. Pop. (1900) 24,200.

NORTHALLERTON, *nawrth-ăl'ér-ton*: town, cap. of the N. Riding of Yorkshire, England, 30 m. n.n.w. of York. It has a town-hall (1874), a cruciform Gothic church with a tower 80 ft. high, and a cloth factory. The battle of the 'Standard,' so called from a huge standard erected on a car by the English, was fought here 1138, Aug. 22, between the English under the earls of Albemarle and of Ferrers and the Scotch under King David. The Scotch were defeated, and forced to retreat with great loss.—Pop. of N. (1881) 3,692; (1891) 3,802.

NORTHAMPTON, *nawrth-ämp'ton*: city, county seat of Hampshire co., Mass.; on the w. bank of the Connecticut river, 17 m. n. of Springfield, 95 m. w. of Boston; at the junction of the New Haven and Northampton, the Connecticut River, and the Central Mass. division of the Boston and Maine railroads. It was settled 1654. It is built on rising ground, and commands a magnificent view of the Connecticut valley and of mts. Holyoke and Tom, the former about 3 m. s.e. It is tastefully laid out, its broad streets beautifully shaded with fine old elms and other trees, and has long been regarded one of the most beautiful cities in New England. It is connected with Hadley, on the opposite bank of the river, by an elegant and substantial iron bridge, 1,218 ft. long and 26 ft. wide. It has an efficient system of water-works, the reservoir having a capacity of 4,000,000 gallons. It contains the county buildings, and memorial hall and public library building, built in memory

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of the Northampton soldiers who fell in the civil war, and costing \$75,000; the library numbers 12,000 vols. Among other institutions are Smith Coll. for young women, with handsome buildings and large endowment; and the Clarke Institution for Deaf Mutes, founded 1867, by the late John Clarke, and endowed with \$3,000,000. It has also the state lunatic asylum, established 1858, with accommodations for about 450 patients. There are many elegant residences, 11 churches, 6 banks, a high school, graded public schools, 3 newspapers, and several excellent hotels, including a large and elegant summer hotel on Round Hill, formerly a famous water-cure establishment. Loudville is in the s.w. part of the city, and Leeds, seat of numerous manufacturing interests, is $4\frac{1}{2}$ m. w. of the centre. Florence, in the n.w. part, 5 m. from the city hall, with horse-car connections, contains the works of the Florence Sewing-Machine Co. The industries of N. are numerous and varied. A stream flowing through the city supplies the water-power for its many mills, whose chief products are silk, cotton goods, cutlery, paper, buttons, wagons, agricultural implements, mirrors, furniture, pencils, screws, wire, rubber goods, skates, machinery, emery wheels, brooms, and baskets—the basket-factory being considered the largest in the world. Although a manufacturing city, the many features of natural and historic interest render N. a charming summer home. Pop. (1860) 6,788; (1870) 10,160; (1880) 12,172; (1890) 14,990; (1900) 18,643.

NORTHAMP'TON: market-town, and parliamentary and municipal borough, cap. of the co. of N., England; on a rising ground on the left bank of the Nen, 67 m. n.w. of London by railway. In the centre of the town is a spacious market-square. The principal edifices are the shire-hall, the new and handsome town-hall, the corn exchange, and numerous churches, several of which are unusually interesting—e.g., St. Peter's, recently restored and beautiful specimen of enriched Norman; and St. Sepulchre's, much improved 1865, one of the very few round churches in the empire, and referred to the 12th c. The hospitals of St. John and St. Thomas were religious houses prior to the Reformation. Boot-and-shoe making, employing about 3,000 persons, is the principal trade. Leather is made, and hosiery and lace are manufactured. Iron and brass foundries are in operation, and brewing is carried on. Two markets are held weekly—a general one on Wednesday, and one for cattle on Saturday. Pop. (1871) of parliamentary borough 45,080: (1881) 57,553; (1891) 75,075; (1901) 87,021.

N., a very ancient town, was held by the Danes at the beginning of the 10th c., and was burned by them 1010. After the Conquest, it was bestowed on Simon de St. Liz. Its castle was besieged by the barons 1215, during the civil wars of King John. It was the scene of a great battle 1460, July 10, during the Wars of the Roses, in which the earls of March and of Warwick defeated the Lancastrians.

NORTHAMPTONSHIRE—NORTHBROOK.

NORTHAMP'TONSHIRE: a central county of England, extending lengthwise n.e. and s.w. 70 m. from Lincolnshire to Oxfordshire; breadth varying from 7 to 26 m.; 629,912 acres, or about 982 sq. m. Its surface is marked by gently undulating hills, alternating with well-watered vales. The chief rivers are the Nen and the Welland, both of which flow n.e., and fall into the estuary of the Wash. The county is traversed by the London and Northwestern, the Great Northern, the Eastern Counties, and other railways; and communication by water is maintained by the Union, Grand Junction, and other canals, and by the rivers. The climate is mild and healthful; the soil, black mold in the fen districts, in the n.e., and brown loam on the uplands, is very productive. White and green crops are abundant, and on the rich pastures cattle are extensively reared for the London market. Hampshire is the usual name not of N., but of *Southamptonshire*. Pop. of N. (1871) 243,891; (1881) 272,555; (1891) 189,218; (1901) 207,467.

NORTH BASS ISLAND: see PUT-IN-BAY ISLANDS.

NORTH BER'WICK: see BERWICK, NORTH.

NORTHBRIDGE, *nawrth'brîj*: a town in Northbridge tp., Worcester co., Mass.; on Blackstone river, 11 m. s.e. of Worcester; on the Providence and Worcester railroad. It has a high school, 5 churches, and a bank. Its industries are manufactures of cotton goods, shirtings, and boots and shoes; it has also a marble quarry. Pop. (1890) 4,603; (1900) 7,036.

NORTHBROOK, *nawrth'brûk*, Lord (Sir FRANCIS THORNHILL BARING): 1790–1866, Sep. 6; b. England; eldest son of Sir Thomas Baring, Bart., and grandson of Francis Baring, founder of the banking-house of Baring Bros. He was educated at Winchester School, and Christ Church, Oxford; was called to the bar 1823; entered parliament as member from Portsmouth 1826, representing that constituency as a whig 39 years. He was lord of the treasury 1830–34, joint sec. to the treasury 1835–39, and chancellor of the exchequer 1839–41. He was first lord of the admiralty in the cabinet of Lord John Russell 1846–52. He was raised to the peerage as Baron Northbrook of Stratton 1865, December.

NORTH'BROOK, Lord (THOMAS GEORGE BARING): born 1826, Stratton Park, near Winchester, England; eldest son of the first baron. He graduated at Oxford 1846; succeeded to the barony 1866, Sep. He was successively private sec. to Mr. Labouchere in the board of trade, Sir George Grey in the home office, and Sir Charles Wood in the India board and the admiralty. He entered parliament as a liberal 1857; was lord of the admiralty 1857–8; under-sec. of state for India 1859, June–1861, Jan.; sec. for war from latter date to 1866, June; and again, on accession of Mr. Gladstone, 1868, Dec.—1872, Feb., when he was appointed viceroy and gov.gen. of India. He resigned 1873, and was created viscount. In 1880 he was first lord of the admiralty in Gladstone's cabinet.

NORTH BROOKFIELD—NORTH CAPE.

NORTH BROOKFIELD, *brūk'fēld*: town in N. Brookfield tp., Worcester co., Mass.; 15 m. w. of Worcester, 3 m. n. of the Boston and Albany railroad, with which it is connected by a branch railroad to E. Brookfield. It contains a savings bank, public library, 4 churches, and boot-and-shoe manufactory. Pop. (1880) 3,427; (1890) 3,871; (1900) 4,587.

NORTH CAPE: promontory in the Arctic Ocean; lat. $71^{\circ} 10'$ n., long. $25^{\circ} 50'$ e.; noted as the most northerly point of Europe. It consists of a long stretch of steep rocks, jutting into the sea and reaching a height of 970 ft., the top showing a large area of table-land and a series of picturesque pyramidal peaks. It forms the n. extremity of Magerøe Island, which is separated from the mainland of Norway by a narrow channel. See MAGERØE.

NORTH CAROLINA.

NORTH CAROLINA, *kār-o-lī'na*: state; one of the United States of America; 12th of the original 13 to adopt the constitution (1789, Nov. 21) by which the Union was formed; a member of the Confederate states 1861, May 21—1865, April 26; fully restored to the Union 1868, July 11.

Location and Area.—N. C. lies midway of the Atlantic coast of the United States; lat. $33^{\circ} 50'$ — $36^{\circ} 33'$ n., long. $75^{\circ} 27'$ — $84^{\circ} 20'$ w.; bounded n. by Va., n.w. by Tenn., s. by Ga. and S. C., and e. by the Atlantic; has extreme width toward the coast of 245 m. from n.e. to s.e., and a shore-line of over 300 m.; longest n. and s. line across the state 185 m., w. end 100 m., and mountain border running s.w. 185 m. long; 52,236 sq. m. (3,620 of water), 33,463,040 acres; extent of navigable streams about 550 m.; cap. Raleigh.

Topography.—The coast region, 100 to 120 m. wide, 20,000 sq. m., is a great plain, somewhat undulating and hilly toward the w. and near the rivers, but toward the ocean a level hardly 20 ft. above the sea, much broken by extensive sounds, bays, lakes, sluggish and muddy rivers very wide toward their mouths and open to the tide for 50 or 60 m. inland, and marshes and swamps estimated to cover 3,000,000 acres. The coast-line is an immense wall of sand thrown up to the height of 75 to 100 ft., and broken through in a few places by inlets connecting the ocean with the extensive sounds lying behind this sand rampart. Currituck Sound lies parallel to the coast, in the extreme n.e., for 50 m. n. and s.; Albemarle extends 50 m. inland from the s. end of Currituck; and the waters of both pass through Roanoke and Croatan sounds, which inclose Roanoke Island, into the n.e. end of Pamlico Sound, which extends 80 m. s.w., filling the great coast-angle of which Cape Hatteras is the point. Core Sound is a narrow extension of the waters of Pamlico, s.w. 30 m. to Cape Lookout; and the same water reaches w., inside the coast-wall, about 40 m. farther, with one inlet opening to the ocean. The other inlets connecting all these sounds with the sea are four: Ocracoke and Hatteras, below Cape Hatteras; and New and Oregon, n. of the cape. The Great Dismal Swamp covers 150,000 acres n. of Albemarle Sound, reaching into Va.; and s. of Albemarle the Alligator or Little Dismal Swamp has nearly the same extent. The Alligator river, which enters Albemarle Sound on the s., is for 20 m. a broad arm of the sound; and similar arms of Pamlico Sound, at its s.w. end, are formed by the wide courses of the Pamlico and Neuse rivers. The Roanoke river enters the e. end of Albemarle Sound from the n.w., and the Chowan from the n. Cape Fear river falls into the Atlantic at Cape Fear, after an e.s.e. course for nearly 300 m. The Tar river is the upper stream which at its widening into a broad water is called the Pamlico. By all these rivers there is good navigation across the coast region of N. C. into the border of the middle region, which is a country of hills and rolling uplands and river valleys,

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raised at its e. border about 200 ft. above sea-level, and sloping upward to an elevation of about 1,000 ft., from which the mountains rise on the w. The area of this middle region is about 20,000 sq. m., and it especially shows, running from the n.w. to the coast region, a system of broad, upland watersheds, separated by wide valleys through which rivers descend, on their way from the mountains to the sea. The Catawba and Yadkin, with their tributaries, are most to the w. or s.w.; and farther e. or n.e. are the systems of the Cape Fear and Neuse, the Tar and Roanoke—giving an extent of valleys and streams, separated by broad-backed uplands, more than 300 m. in width from southwest to northeast.

At the w. or n.w. of the middle region, the Piedmont plateau, 60 to 75 m. wide, rises from 1,000 ft. above sea-level on its e. margin to 1,200 or 1,500 ft. at the foot of the mountains—a section of the Blue Ridge which rises steep, ragged, and broken 2,000 to 3,000 ft. above the w. edge of the plateau, with many high spurs sent out into the plateau, and a few irregular ranges quite crossing it, to the e. or the s. Beyond the Blue Ridge chain, which has a few summits—midway of its straggling course across the state from n.e. to s.w.—rising to nearly 6,000 ft., there lies a high trough—15 to 50 m. wide, 200 m. long from n.e. to s.w.—the lofty w. or n.w. wall of which is formed by the Great Smoky Mountains, a chain forming the chief southern extension of the Appalachians, on the boundary between N. C. and Tenn. This boundary chain is of 5,000 to 6,000 ft. elevation, with many of its summits 6,500 ft. and upward, but broken by cuts, through which six or seven rivers pass out of the great intermountain trough by channels as low as from 2,000 to 1,200 ft. above sea-level. The Hiawassee, at the extreme s.w., the Little Tennessee, Big Pigeon, and French Broad rivers are the chief streams which send their waters through these deep gaps into the valley of the Tennessee. The great plateau between the Smoky and Blue Ridge mountain chains is cut up by many lofty cross-chains, separated by deep cross-valleys or river-basins. These valleys have an elevation of 2,000 to 3,000 ft., with bench or plateau margins reaching 3,500 to 4,000 ft.; and the cross-chain summits are 5,000 to 6,500 ft. high. One of these, Mitchell's Peak, in the Black Mountains, is 6,688 ft. high, 400 ft. above the top of Mount Washington in N. H., and the highest point e. of the Mississippi. The number of rivers of N. C., with the amount of fall of the water-courses, creates an aggregate of water-power estimated to exceed that of all the steam-engines of the United States.

Climate.—In variety of equable, pleasant, and healthful climate, N. C. is one of the most favored regions of the globe: the death-rate is less than the average for the United States, and it embraces one of the two areas where consumption is unknown. An exception to the healthfulness of the climate is in the presence of malaria along some of the rivers in the lowlands. The coast re-

gion has a subtropical climate, and from this, going w. to the mountain region, the climate changes to that of New England, yet with the two great advantages of absence of humidity and of extreme cold in winter. The rainfall is 60 in. for the coast region, 45 for the middle, and 58 for the w. or mountain; yet the air is as dry as that of France, greatly favoring the cultivation of the vine, cotton, silk, etc. The average temperature for the coast, middle, and mountain regions is: summer 79°, 77°, 70°; winter 46°, 44°, 38°. The prevalent winds of the three regions are: coast s.w., middle n.w., mountain w. The state has almost complete immunity from violent atmospheric disturbances.

Geology.—The broad coast region shows over its whole extent a thin covering, from a few feet to 25 and 50, and sometimes to 100 and 200 ft., of tertiary sands, gravels, and clays, with rudely stratified earths and shingle beds toward the w. border, and frequent outcrops of marls, shell limestones, and coarse chalk beds in the water-courses and ravines throughout all its middle and e. parts. Beds of half-compacted greensand, sometimes filled with shells, show the cretaceous formation in the river beds and banks of the s. half of this region. Patches of shingle beds, clays, and gravels, of quaternary origin, are found here and there, overlying the tertiary mantle, and reaching at times a thickness of 30 to 50 ft. W. of the upper half of the coast-region tertiary beds lies a breadth, about 20 m. wide, of azoic slates and felsites, seen only where they have been uncovered, in the beds and bluffs of the larger water-courses; and w. of this, in the region of Raleigh, a like 20-m. breadth of azoic gneisses and schists. Next w. of these formations, and in the s. half w. of the coast-region tertiary beds, lies a long and narrow mesozoic belt, 5 to 6 m. wide, evidently a remnant of a broad, flat anticlinal which extensive erosion has elsewhere removed. It enters N. C. from S. C., a few m. w. of the Pedee river, and passing within 10 m. w. of Raleigh extends to within 15 m. of the n. border of the state. It forms a trough-like terrane showing triassic sandstones, conglomerates, clay-slates, and shales, several thousand ft. in thickness, with a s.e. dip of 10° to 20°, and carrying a 6-ft. seam of bituminous coal. A second belt of the same character, 2 to 4 m. wide, 40 m. long, lies along the valley of the Dan river, in a nearly e. and w. direction, near the n. boundary of the state. It carries a 3-ft. seam of semi-bituminous coal. This coal is triassic, not carboniferous, is of the best quality, and the 70 sq. m. of the two fields are estimated to contain 420,000,000 tons. The slate associated with the coal yields 30 to 40 gals. per ton of crude petroleum. To the w. of the first of these coal-bearing belts, a zone of azoic slates extends from n.e. to s.w. across the state, with a breadth of 20 to 40 m. The rest of the state to the w. shows azoic formations only, lying in zones parallel to the Appalachian axis—the Laurentian, Montalban, Huronian, etc., succeeding

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each other, in broad belts of granites, gneisses, and schists, with narrow separating belts of quartzites, limestones, sandstones, and slates.

The mineral wealth of N. C. is of great variety, and co-extensive with the immense breadth of metamorphic rocks occupying the w. and middle regions of the state. Gold occurs both in veins and in placers from Cherokee co., in the extreme s.w., to Halifax co., on the Roanoke, within 110 m. of the n.e. corner of the state; and silver, copper, and iron are not less widely found. The best gold-bearing placers are in the s. half of the great midland slate belt, and among the foot-hills and spurs of the central part of the Piedmont plateau. The thickness of the deposits is slight, compared with those of Cal., being 5 or 10 to 20 ft. generally, and rarely 40 to 50 ft. The same midland region has also the best vein mines—e.g., the Gold Hill of Rowan co., discovered 1840, worked to a depth of 750 ft., and reputed the richest in the United States before the Cal. gold discoveries. There are notable silver mines also in this region, and copper veins are numerous, besides the copper ores frequently found in the gold veins. Both in the middle and the w. regions, ranges of magnetic and hematite iron-ore beds cross the state from n.e. to s.w. These ores are of high value, and much in demand for Bessemer furnaces. Limonite beds are widely found; spathic ore occurs with gold and copper in some of the midland mines, and black-band ore with coal. Most extensive and valuable mica mines in the mountain region, notably Mitchell co., have been worked since 1867, and furnish the chief supply of mica for both the United States and Europe. The same is true of the N. C. supply of corundum or emery. Both white and colored marbles are extensively found, and building-stones of every variety; also whetstone, millstone, and grindstone grits, potter's clay and fire-clay, and immense beds of peat in the coast region. There occurs also a great variety of other minerals of value in the arts, and nearly 20 different species of gems. Diamonds of fine water have been found; detached crystals of zircon, garnets, and graphite occur; also arsenic, antimony, bismuth, cobalt, and nickel. Ancient mines of unknown date and origin are found among the mountains; and in some of the river-courses, freshets have exhumed skeletons, burial urns, ornaments, weapons, and various utensils and implements of stone, pottery, and copper. Valuable mineral and warm springs in the w. section afford places of resort for both health and pleasure.

A special survey, 1886, showed a belt of valuable phosphate beds, 15 to 20 m. wide, entering from S. C. through Columbus co., extending n.e. 100 m. to the Neuse river, thence s. through Onslow co. to the ocean. The soils of N. C. are in variety and fertility adapted to a remarkably rich and varied flora. In the coast region, extensive tracts of swampy lands have a black peaty soil of great depth and of a richness that will give 50 to 60 bushels of In-

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dian corn to the acre for a hundred years in succession. The more upland soils of this region are moderately fertile sands and loams, interspersed with ridges or long patches of very sandy and sterile 'pine barrens.' On the benches and lower levels, especially along the borders of the streams, and shores of the sounds and bays, are wide and fertile alluvial tracts. In the middle and mountain regions, the soils are generally clayey, sandy, and gravelly loams, with a considerable proportion of clay soils, both on the uplands and in the numerous creek and river bottoms, which are very durable and productive. Even the highest and most rugged mountains are covered with soil and clothed with forests to their summits.

Dense forests cover more than half the area of the state, in three broadly distinguished regions: the w. or mountain being marked by its spruces, firs, oaks, chestnuts, hemlocks, poplars, and white pines; the e. coast region by live-oak, long-leaf pine, magnolias, and palmettos, and, in the swampy tracts, junipers and cypresses; and the middle region by varieties of oak, ash, sycamore, bird's-eye maple, hickory, walnut, cedar, cherry, etc. There are extensive chestnut forests in the mountains, where the trees reach 80 to 100 ft. in height and 8 to 10 ft. in diameter. The poplar equally abounds and is of similar dimensions; and the hickories, of which there are six species, are widely distributed and supply timber exceeding all other in weight and strength. The species of oak number 19, of pines 8, of maples 5, of magnolias 7, of birches 3; and the total number of species of trees is 112, and that of shrubs, many more than 20 ft. high, 224.

Zoology.—Deer, bears, the gray, red, and black foxes, wolf, opossum, raccoon, squirrel, and several species of rabbits, the bald and gray eagles, several species of falcons, the fish-hawk, buzzard, raven, crow, blackbird, pheasant, woodcock, dove, pigeon, lark, mocking-bird, and whip-poor-will are found in the w. and middle parts of N. C.; otters, beavers, swamp bears, and musk rats in the coast region; with quail, partridges, and other game plentiful in its forests, and wild fowl of every species on its waters—swans, geese, brant, pelicans, snipes, plover, and a great variety of ducks being specially abundant; Spanish mackerel, shad, sheepshead, blue, red, and black fish, bass, flounders, soles, mullet, terrapin, turtles, and innumerable herring in the extensive sounds, bays, and rivers; and the viper, rattlesnake, king, cow, green, and chicken snakes inhabiting the swamps. Shad have been extensively planted in several rivers 1879–89, and the shad-fisheries are of special value, securing the early market for from 4,000,000 lbs. upward. The catch of 'alewife,' from 16,000,000 lbs. upward, exceeds that of any other state. The mullet-fisheries are second only to those of the Florida coast, and from 40,000 upward are annually taken of terrapin. A survey of the waters of the state, 1886–88, found 583,-

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000 acres, of more than 1,000,000 examined, suitable for oyster-culture; 10,400 acres of natural oyster-beds, and 2,300 of artificial, in 1886; and 1890 entries of oyster-ground covering more than 50,000 acres.

Agriculture.—The agricultural products of N. C. include almost everything grown between the Gulf of Mexico and the great lakes, except the orange. Indian corn flourishes over a large part of the state. In 1890 the acreage devoted to corn was 2,360,627, and there were produced 25,783,623 bushels. There were 1,147,136 acres in cotton, producing 160,396,497 pounds, or 336,261 bales of 477 pounds each. Of the 96 counties of the state 80 produced cotton, three of them having over 50,000 acres; 49 ranged from 1,000 to 25,000 acres, and 13 from 25,000 to 50,000 acres; 15 had less than 1,000 acres. It is the chief market-crop of the e. or coast region and of the s. half of the middle region. In the n. half of the middle region and of the Piedmont district tobacco is the chief market-crop. It was grown before the war in only six or seven cos. on the n. border, and only the black variety produced on rich alluvial soils and known as 'shipping tobacco.' The culture has extended now into the central and even w. parts of the state, and has turned exclusively to the fine variety known as 'yellow tobacco,' of which the largest supply now comes from N. C. The growth of this staple dates from a planting, about 1852, by Eli and Elisha Slade, in Caswell co. From this it spread, as the value of the crop yielded by thin, poor soil was noted. over all of Caswell co., also a little into Va., and over Person, Granville, and Rockingham cos., finally extending by spots wherever the gray, sandy, light soil, with a yellow, sandy-clay subsoil, was found, until the range of the crop was over $8\frac{1}{2}^{\circ}$ of lat., and from the coast-belt about Goldsborough to Madison co., in the w., with elevations 200 ft. to 3,000 ft. above sea-level. The other type of N. C. soil, a dark loam with red-clay subsoil, is suited especially to the cereals and to a heavy dark or red tobacco. The growth of yellow and other types of fine tobacco has enormously enhanced the value of poor and worn-out lands, and improved correspondingly the condition of the poorest farming classes. Old pine-fields, with a gray, sandy soil and a yellow subsoil, are the best of fine tobacco lands. Rice, cultivated formerly only in the lower valley of the Cape Fear river, and of only the water variety, is now extensively grown of the upland variety, and has become one of the staple products of the state. Sweet potatoes have long been one of the great crops of N. C., counting (1890) no less than 5,665,391 bush., to 1,199,416 of Irish potatoes; and of peanuts as much as 421,138 bush. have been produced in a single year. The wheat-crop, which 1880 was 3,397,395 bush., had risen 1890 to 4,292,035 bush. Oats have been an even larger crop, and buckwheat, grasses, and other north-temperate-zone products are abundant in more elevated parts. Grapes are grown in all parts of the state, of remarkable size and flavor,

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and high wine-making value; cranberries are produced in abundance; also apples, peaches, plums, cherries, and a great variety of berries. Various medicinal herbs, as wild ginger, ginseng, hellebore, snakeroot, spikenard, etc., form a valuable product. The culture of sorghum-cane has increased rapidly in recent years. Among natural products of great value in N. C. are the pitch, tar, turpentine, rosin, and pinewood oil, drawn from some of the forest trees. An immense territory, level, sandy, and barren, lying w. of the coast swamps, next to the more hilly middle region, is covered in great part with the piney woods—the long-leaf pine, *Pinus palustris*, the sap of which is crude turpentine. The tree stands, with a bare, straight trunk 10 to 20 in. in diameter, 25 to 30 ft. high, above which its evergreen foliage forms a close canopy almost excluding the light. The merest openings serve as roads, commonly without bridges over the streams; but these forests have for more than a century supplied the world with a large portion of its turpentine, tar, pitch, and rosin, and, more recently, with the pinewood oil, distilled from ‘fat pine’ at the rate of 80 gals. from a cord of the cut pine.

By the census of 1890, N. C. had 178,359 farms, covering 22,651,896 acres, of which 7,828,569 were improved, 14,823,327 unimproved, the average size of farms being 127 acres. The estimated value of farms, buildings, and improvements was \$183,977,010; of implements and machinery, \$7,183,210; of live stock, \$25,547,280; the total of the three items being \$216,707,500. There were 131,451 horses, 100,011 mules and asses, 630,903 neat cattle, 1,251,006 swine, and 402,247 sheep, not including lambs. Tons of hay harvested, 191,262; pounds of wool shorn, 733,765; pounds of butter produced, 13,129,374. The total production of rice was 5,846,404 pounds, and in flax-raising the state stood 21st in acreage. There were raised 4,512,762 bushels of oats, 276,339 of rye, 12,621 of buckwheat, 3,521 of barley, and 36,375,258 pounds of tobacco. In 1893 the corn-crop reached nearly 30,000,000 bush., and in 1894 about 33,000,000. Truck-farming is rapidly becoming an important industry, especially in the eastern and middle sections of the state. In 1900 there were reported 224,631 farms, covering 22,749,356 acres, of which 8,327,106 acres were improved and 14,422,250 acres unimproved; and all farm property, including buildings, implements, machinery and live stock was valued at \$233,834,693.

Manufactures.—N. C. has an almost unexampled natural supply, both of raw materials and of water-power, for the greatest variety of manufactures; and from about 1876 very great progress has been made. The earliest and long the only considerable manufacture in the state was the production of spirits of turpentine from the sap of the long-leaf pine, and of rosin, the thick residue left after distilling off the refined turpentine; also of tar, procured by pit-burning of the cut pine, and of pitch, got by driving off from tar its volatile element. The greatly extended growth of a fine quality of tobacco has

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developed a very large manufacture of smoking tobacco and of plug tobacco. The pinewood oil distilled from fat pinewood, for use in preserving woods, especially the timber of ships and boats, has created an industry, at Wilmington, almost as important as the production of turpentine and tar. The cotton manufacture is another great element of the new wealth of N. C. There were 49 establishments (1880), with 92 385 spindles and \$2,855 800 in capital. In 1887 the number of mills had risen to about 80, with over 200,000 spindles, more than \$4,000,000 in capital, and the consumption annually of 30,000,000 lbs. of cotton. In 1896 there were 156 cotton-mills in the state, and 167 in 1897. In the latter year there were nearly 25,000 looms and 1,000,000 spindles; 4,900 men, 6,150 women, and 4,700 children were employed, the capital invested being about \$15,600,000, and about 125,000,000 lbs. of cotton being consumed. In both coal and iron N. C. has the basis of development of a great variety of important manufactures; and the same is true of the woods of the state, 112 varieties of which have been exhibited, and of the inexhaustible supply of fine marbles, and the yet undeveloped mines of gold, silver, copper, and other minerals. The canning of fruit and vegetables has been extensively entered upon since 1885. A highly successful silk-factory, put in operation 1888, the first experiment of the kind in the south, opens an industry promising great development. Other manufactures are flour, lumber, cotton-seed oil, carriages and wagons, and zinc, smelted and rolled. The making of wagon-spokes, hubs, and axle-handles, of the tough oak and hickory of N. C., has built up factories in the central part of the state; and the w. part produces locust pins, for use in ship-building, from the yellow locust of that region. Fine black walnut is shipped in the log, also butternut, white ash, cherry, maple, and birch, not only to eastern U. S. ports, but also to France. N. C. had (1890) 3,367 manufacturing establishments, employing 36,214 hands, paying \$7,830,536 wages, using a capital of \$32,745,995, materials valued at \$22,789,187, yielding products valued at \$40,375,450. The chief industry, according to capital employed, was the manufacture of cotton goods (see above). Next, lumber and other mill products from logs or bolts, establishments 688, capital \$5,319,589, value of products \$5,767,687; tobacco, chewing, smoking, and snuff, 90 establishments, capital \$3,370,267, value of products \$4 783,484; cigars and cigarettes, 17 establishments, capital \$1,073,390, value of products \$2,551,567; flouring and grist mill products, 1,039 establishments, capital \$2,334,130, hands employed 1,721, wages \$391,576, value of products \$5,273,668. In 1900 there were reported 7,226 manufacturing establishments, employing \$76 503,894 cap. and 70,570 persons, paying \$13,868,430 for wages and \$53,072,388 for materials used, and yielding products valued at \$94,919,663.

Commerce.—N. C. has spacious harbors at Edenton, on the n. side of Albemarle Sound; at New Berne,

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reached through Pamlico Sound and the estuary of the Neuse river; at Beaufort, opposite the first inlet s. of entry to as many customs districts, but nearly all exports and imports are through Wilmington. The chief foreign exports are turpentine, tar, rosin, and pitch; and the domestic, cotton, tobacco, fish, lumber, and flour. The internal-revenue receipts for the year ending 1902, June 30, were \$5,618,660.

Railroads.—N. C. has had growth in railroad extension, largely through state aid, as follows: built (to (1840) 53 m.; (1850) 283 m.; (1860) 937 m.; (1870) 1,178 m.; (1880) 1,486 m. (1885) 1,978 m. (1888) 2,528 m.; (1895) 3,616 m.; (1901) 3,776 m. The consolidated bonds of the state representing aid to railroad extension, as funded under the act of 1879, Mar. 4, are: in 30-year bonds at 4 per cent., 1880, July 1—1910, July 1, \$3,151,100, making an annual interest charge of \$126,044. The North Carolina railroad bonds, under acts of 1848–54, are: in 30-year bonds at 6 per cent., 1853–55—1883–85, \$2,720,000, making an annual interest charge of \$163,200. There are over 50 companies owning the railroads of N. C., but for operation and maintenance they are largely combined into systems, under long leases. The North Carolina railroad, 223 m., from Charlotte to Goldsborough, chartered 1849, opened 1856, was leased for 30 years from 1871, Oct. 1, at \$260,000 a year, to the Richmond and Danville railroad. The state issued 30-year bonds, 1853–4–5, for \$3,000,000, to take three-fourths of its stock; took up \$205,000 of these 1866, and 1882 issued new bonds to take up the old. The Atlantic and North Carolina (chartered 1853, opened 1858), 95 m., from Goldsborough to Beaufort, was built to extend the North Carolina to the sea. The state has \$1,266,500 in its stock, and private holders \$535,500. The Western North Carolina, chartered 1855, opened from Salisbury to Old Fort 1869, to Swannanoa 1879, to Asheville Junction 1880, and to Paint Rock, Tenn., 1882 (connecting with the East Tennessee Virginia and Georgia railroad), was leased 1886 to the Richmond and Danville. A branch from Asheville to Jarrett, 100 m., was opened to Nantahala 1884, and to Jarrett 1887. The ten miles' mountain section of the main line, beginning beyond Old Fort and extending to the summit in Swannanoa Gap, has a long tunnel under the Blue Ridge, and six other tunnels, making in all a length of 3,636 ft., requiring 40,000 cubic yards of cutting through solid rock. The entire roadway for this section, besides the tunnels, is a succession of cuts and fills. Five main cuts required the removal of 465,000 cubic yards of earth and stone, and four main fills took 682,000 cubic yards. One mountain stream is crossed 12 times in 6 m. Besides the culverts, of which three (arch) are 402 ft., 288 ft., and 260 ft. long, there are eight stone viaducts and three trestle bridges. The road rises 102 ft. to the mile, or 1,020 ft. for the

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section. The engineering achievement is not greater than the value of the line to the eleven s.w. cos. of the state, which form one of the richest portions of the continent in varied natural resources. The Cape Fear and Yadkin Valley railroad, reorganized 1879, from an earlier road chartered 1852, extends from the s. line of the state 112 m. to Greensborough, thence 69 m. to Mt. Airy; opened in part 1884, and to Mt. Airy 1889, and afterward extended to Wilmington. The state has \$550,000 in its stock.

Religion.—In 1890 there were in the state 6,824 church organizations, 6,512 edifices, and a combined membership of 685,194, constituting 42.35 per cent. of the population. Church property was valued at \$7,077,440. Of the 30 different denominations represented the leading ones were the Bapt., 3,144 organizations; all Meth. bodies, 2,413 organizations; all Presb., 411; Disciples of Christ, 186; all Lutherans, 131; Prot. Episc., 178; Christians, 158.

Education.—In 1895 the public-school population of the state was given at 601,000 whites and 359,385 colored, the whites having 4,603 schools and the colored 2,376. Expenditures for school purposes amounted to \$775,449. During 1896 about 664 more schools were taught than during 1895. The legislature provided for special levies in the counties, in order to keep the schools open 4 months in the year, but the levy was resisted, on the ground that it brought the amount of state and county taxes above the constitutional limit. The supreme court held that the school-tax was included in the term "state and county tax," and as a result there were but 63 days' schooling. Normal schools are maintained at Greensboro and several other places in the state, that at Greensboro, for girls, having about 400 students. The State College of Agriculture and Mechanic Arts had about 500 students. Colored normal schools are established at Goldsboro, Elizabeth City, Salisbury, Fayetteville, Franklinton, and Plymouth. Among the leading denominational institutions are: Trinity Coll., at Durham, and Livingston Coll., at Salisbury (Meth. Episc.); Biddle Univ., and Charlotte and Davidson Colls., at Davidson (Presb.); Lenoir Coll., at Hickory, and North Carolina Coll., at Mount Pleasant (Luth.); Wake Forest Coll., at Wake Forest, and Shaw Univ. at Raleigh (Bapt.); Weaverville Coll., at Weaverville (Meth. Episc. S.); Catawba Coll., at Newton (Refd. Ch.); and Guilford Coll. (Friends). The Univ. of N. C., at Chapel Hill, founded 1793, under a charter obtained 1789, extends valuable aid to needy students. In 1902 it had 69 professors, 651 students, and a library of 33,000 vols.; the tuition cost per annum is \$60; living expenses, \$250. There were 1902 250 newspapers published—27 daily, 1 tri-weekly, 173 weekly, 16 semi-weekly, 1 bi-weekly, 7 semi-monthly, 24 monthly, 1 quarterly.

Finances.—The total assessed valuation of property was, in 1880, \$156,100,202; in 1890, \$235,200,671; in 1894, \$262,927,119. The aggregate of the public indebtedness amounts to about one twenty-fifth part of the taxable valuation of

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property. The bonded debt was (1896) \$3,360,700. The receipts of the school-fund in 1895 were \$825,988; in 1896, \$824,238; disbursements, \$834,711 in 1895, and \$817,562 in 1896. In 1903 the total funded debt was \$6,119,000, and the recognized funded debt \$238,620. The assessed valuation was real estate \$175,366,240, personal \$108,075,569; railroads \$42,448,799; total, \$325,890,608. In 1895-6, 39 life-insur. com. and 84 mis. com. did business in the state. Risks to the amount of \$52,469,000 were written by the fire-insurance companies, \$911,875 premiums were received, and \$501,162 losses paid. The total number of state pensioners was 5324, receiving from \$16 to \$64; total paid to all, \$104736.

History.—Sir W. Raleigh explored the coast 1584; sent a colony of 103 persons 1585, Apr., who attempted a settlement on Roanoke Island, but returned the next year; and sent a second colony 1587, but for some years left it uncared for and then could find no trace of it. A new start was made by Charles II., who made a grant 1663, Mar., to 8 lords proprietors, of all lands s. of Va., to a point now in Florida. Under a similar (ineffective) grant 1629, made by Charles I. to Sir Robt. Heath, the name Carolina had been given to the region; and within the present N. C., persons from Va. had settled what became the nucleus of the future state, on Albemarle river. Sir William Berkeley, of Va., was one of the 8 proprietors of Carolina, and under a royal commission 1663, Sep., he appointed William Drummond first gov. to the settlement n.e. of the Albemarle. In 1667 John Locke prepared the elaborate paper constitution, which after alterations 1670 and 82, and far more sweeping changes 1693, was abandoned altogether, the colonists having practically disregarded it, while the proprietors kept up hardly more than an empty show of authority in the n. part of Carolina, which from about 1690 grew to be distinguished as N. C. instead of 'Albemarle,' its earliest name. Colonists had come, French Huguenots, German Lutherans, and Swiss, who founded New Berne. The pop. (1674) was about 4,000, and the tobacco product 800,000 lbs. After Cary's rebellion, 1711, and a short but sharp war with the Tuscaroras and other Indians, 1711-13, a half-century of quiet growth followed. From 1729 the colony became a royal possession by purchase from the proprietors. Great numbers of North of Ireland, Scottish Highland, and Moravian emigrants settled within the limits of N. C. Its several sections were occupied chiefly as follows: English Quakers and Baptists in the n.e., Swiss and French on the e. coast, Scotch in the s. toward the coast, and Scotch-Irish farther w., Dutch in the w. centre, and Moravians in the n.w. The royal govt. was last recognized 1774, Mar., and the same year, Aug., a provincial congress chose delegates to the first continental congress. A second provincial congress, called 1775, Apr., met Aug., and organized a govt. for N. C. In May of the same year, a local movement gave celebrity to Mecklenburg (q.v.), for its early dec-

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luration of independence. At the opening of the revolution, early in 1776, the British under Gov. Tryon were defeated by N. C. militia; her men served north and south in the patriot army, lost heavily in the fall of Charleston, and during the later years of the war, when the theatre of conflict was in part within the state, contributed, at King's Mountain (1780) and at Guilford Court-house (1781), toward the successful contest with Cornwallis, which forced him upon Yorktown and brought his final defeat. The jealousy for local independence of the people of N. C. made her the latest, except R. I., of the old thirteen to adopt the constitution and become one of the states of the Union; but 1861 she was the last of the southern states to join the Confederacy, by the war for which her resources in men and supplies were severely drained, while the federal forces 1861 seized forts Hatteras and Clark; later captured Roanoke Island and New Berne; still later the region about Plymouth, Kinston, and Washington: and important battles were fought on her soil, at Averysborough, Bentonville, and in the taking of Fort Fisher. The earliest reconstruction of N. C. began with a convention 1865, Oct. 2, which took all the proper steps for renewed state organization and action, except ratification of the 14th amendment to the constitution of the United States. Under military govt., pursuant to an act of cong. of 1867, Mar. 2, a registration of voters was conducted Aug.-Oct.; an election held and vote taken to call a convention, and delegates chosen, Nov. 19 and 20; the convention held 1868, Jan. 14, and constitution framed; vote of the people to ratify it taken Apr. 21-23, and a state govt. and representatives to congress elected, upon which an act of cong., June 25, authorized the recognition of the state on its ratification of the 14th amendment. The state legislature met July 1; duly ratified the amendment July 2; and July 11 a presidential proclamation completed the restoration of the state to its place in the Union.

Government.—The state govt., under the constitution ratified by the people 1868, Apr. 21-23, consists of (1) executive officers elected for a term of four years, as follows: gov., salary \$4,000, lieut.gov., who is pres. of the senate, sec. of state (\$1,000 and fees), treasurer (\$3,000), auditor (\$1,250 and fees), supt. of public instruction (\$1,500), and atty.gen. (\$1,500 and fees); (2) a legislature, comprising a senate of 50 members and a house of 120, elected for a term of two years; and (3) the judiciary, comprising a supreme court composed of chief-justice and five associate justices (increased from three 1888, Nov.), elected for a term of eight years, with salary of \$2,500 each; and a superior court, twelve judges in as many judicial districts, election, term, and salaries, the same as the supreme court judges. The sec. of state, auditor, treas., and supt. of public instruction, form the council of state to advise the gov. in all executive action. The clerks of the superior courts act as probate judges; and justices of the peace have the

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usual minor jurisdiction, criminal and civil. The constitution prohibits secession, preference of state claims to national, payment of Confederate claims or for slaves freed by the war, and any servitude except in due punishment of crime, or any property qualification for voting or holding office.

The successive govts. with their terms of service have been: Richard Caswell 1777-79; Abner Nast 1779-81; Alexander Martin 1782-84; Richard Caswell 1784-87; Samuel Johnston 1787-89; Alexander Martin 1789-92; R. D. Spaight 1792-95; Samuel Ashe 1795-98; William R. Davie 1798-99; Benjamin Williams 1799-1802; James Turner 1802-05; Nathaniel Alexander 1805-07; Benjamin Williams 1807-8; David Stone 1808-10; Benjamin Smith 1810-11; William Hawkins 1811-14; William Miller 1814-17; John Branch 1817-20; Jesse Franklin 1820-21; Gabriel Holmes 1821-24; H. G. Burton 1824-27; James Iredell 1827-28; John Owen 1828-30; Montfort Stokes 1830-32; David L. Swain 1832-35; R. D. Spaight 1835-37; Edward B. Dudley 1837-41; John M. Morehead 1841-45; William A. Graham 1845-49; Charles Manly 1849-51; David S. Reid 1851-55; Thomas Bragg 1855-59; John W. Ellis 1859-61; H. T. Clark (acting) 1861-2; Zebulon B. Vance 1862-65; W. W. Holden (provisional) 1865; Jonathan Worth 1865-68; W. W. Holden 1868-71 (removed by impeachment 1871, Mar.); Tod R. Caldwell 1871-74; Curtis H. Brogden 1874-76; Zebulon B. Vance 1877-80; Thomas J. Jarvis 1881-84; Alfred M. Scales 1885-88; D. G. Fowle 1888-91; T. M. Holt 1891-93; Julius Carr 1893-96; D. L. Russell 1897-1901; C. B. Aycock 1901-5.

Counties, Cities, and Towns.—N. C. has 97 cos., mainly rural, until the considerable development within a few years of new industries creating important centres of population. In 1890 the most populous *counties* were: Wake 49,207; Mecklenburg 42,673; Buncombe 35,266; Robeson 31,483; Halifax 28,908; Forsyth 28,434; Guilford 28,052; Cumberland 27,321; Johnston 27,239; Wayne 26,100; Pitt 25,519; Iredell 25,462; Chatham 25,413; Randolph 25,195; Sampson 25,096; Granville 24,484; Rowan 24,123; and Edgecombe 24,113; *cities and towns*: Wilmington 20,056; Raleigh 12,678; Charlotte 11,557; Asheville 10,235; Winston 8,018; New Berne 7,843; Durham 5,455; Salisbury 4,418; Concord 4,339; and Fayetteville 4,222.

Politics.—State, congressional, and presidential elections are held on Tuesday after the first Monday in Nov. every four years. N. C. has 11 electoral votes. Votes for pres. and vice-pres. have been as follows: 1789, did not ratify the constitution in season to vote; 1792, George Washington and George Clinton 12; 1796, Thomas Jefferson 11, Aaron Burr 6, James Iredell 3, George Washington 1, John Adams 1, Thomas Pinckney 1, and C. C. Pinckney 1; 1800, Thomas Jefferson 8, Aaron Burr 8, John Adams 4, C. C. Pinckney 4; 1804, Thomas Jefferson and George Clinton 14; 1808, James Madison and George Clinton 11, C. C. Pinckney and Rufus King 3; 1812, James Madison and Elbridge Gerry 15; 1816, James Monroe and Daniel D.

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Tompkins 15; 1820, James Monroe and Daniel D. Tompkins 15; 1824, Andrew Jackson and John C. Calhoun 15; 1828, Andrew Jackson and John C. Calhoun 15; 1832, Andrew Jackson and Martin Van Buren 15; 1836, Martin Van Buren and Richard M. Johnson 15; 1840, William Henry Harrison and John Tyler 15; 1844, Henry Clay and Theodore Frelinghuysen 11; 1848, Lewis Cass and William O. Butler; 1852, Franklin Pierce and William R. King; 1856, James Buchanan and John C. Breckinridge; 1860, John C. Breckinridge and Joseph Lane 10; 1864, did not vote; 1868, Ulysses S. Grant and Schuyler Colfax 9; 1872, Ulysses S. Grant and Henry Wilson 10; 1876, Samuel J. Tilden and Thomas A. Hendricks 10; 1880, Winfield S. Hancock and William H. English 10; 1884, Grover Cleveland and Thomas A. Hendricks 11; 1888, Grover Cleveland and Allen G. Thurman 11; 1892, Grover Cleveland and Adlai E. Stevenson 11; 1896, William J. Bryan and Arthur Sewall 11; 1900, William J. Bryan and Adlai E. Stevenson 11.

Population.—(1790) 288,204 whites, 100,572 slaves, 4,975 free colored—total 393,751 (3d in rank of the states); (1820) 419,200 whites, 204,917 slaves, 14,712 free colored—total 638,829 (4th in rank); (1850) 553,028 whites, 288,548 slaves, 27,463 free colored—total 869,039 (10th in rank); (1870) 678,470 whites, 391,650 free colored—total 1,071,361; (1880) 867,242 whites, 532,508 free colored—total 1,399,750, of which 1,396,008 were native and 3,742 foreign-born; (1890) 1,617,947; (1900) 1,893,810.

NORTH CONWAY, *kõn'wā*: village and summer resort in Conway tp., Carroll co., N. H. It is in the s.e. portion of the famous White Mountain region; on the Saco river; on the Portland and Ogdensburg, and the Eastern division of the Boston and Maine railroads; 138 m. n. of Boston. Its site is elevated, overlooking the valley of the Saco and commanding fine views of the mountains. Picturesqueness and healthful air have made the place a favorite summer resort. The Artist's Falls, Echo Lake, Cathedral, and other points of interest are near. There are three churches, an academy, six hotels, and several boarding-houses. Pop. tp. (1890) 2,331; (1900) not reported separately.

NORTH DAKOTA.

NORTH DAKOTA, *da-kō'ta*: state; one of the United States of America; 39th in order of admission into the Union, 26th under the federal constitution; created a state from the part of the terr. of Dakota n. of the 7th standard parallel; admitted by presidential proclamation 1889, Nov. 2.

Location and Area.—N. D. is in lat. 46° — 49° n., long. $96^{\circ} 20'$ — 104° w.; bounded n. by British America, e. by Minn., s. by S. D., w. by Mont.; extreme breadth n. to s. a little more than 210 m., extreme length e. to w. 300 m.; 74,312 sq. m. (47,569,680 acres); cap. Bismarck.

Topography.—The state is almost entirely an undulating prairie, with no prominences of note; and is divided naturally into the Red river and James river valleys, the Devil's Lake and Turtle Mountain regions, and the Mouse river, Missouri slope or coteau, and the w. Missouri or w. N. D. countries. The valley of the Red river of the north is a broad plain 50 to 60 m. wide, sufficiently high above the river to prevent overflows and to afford thorough drainage. It is, agriculturally, the garden spot of the n.w. country; is now well supplied with railroads; contains more than one-third the population of the state (1900); and has only one-fifth of its area under cultivation or other improvement. The Red river is navigable from Fargo to Winnipeg, empties into Lake Winnipeg, and ultimately discharges its waters into Hudson's Bay, through Nelson river. The valley has a deep, dark, mold soil, and between it and the Bad Lands on the w. is an equally fertile prairie country more than 300 m. broad. The James river valley contains some of the most prosperous counties in the state, and is one of the most noted artesian-well regions in the world. All forage and root crops do well here, and the stock-raising interests are steadily expanding. The seeding season usually begins Apr. 10, the breaking season June 1, hay harvest July 15, and barley, oat, and wheat harvest Aug. 10. The Devil's Lake and Turtle Mountain regions contain a beautiful inland sea, with heavy belts of valuable forest, and a range of hills extending into Manitoba, with their highest points, Bear Butte and Butte St. Paul, this side the boundary of Brit. America. These regions abound in coal, building-stone, timber, farming-lands, numerous streams, and are supplied with branch railroads; and iron ore is believed to exist in paying quantities. The wheat which took the premium at the New Orleans World's Fair was raised on the s. slope of Turtle Mountain, at Bottineau. The Mouse river rises in the Northwest Terr., enters N. D. in Renville co., follows an oxbow course through Ward, Stevens, McHenry, Bottineau, and Wynn counties, enters Manitoba, and, uniting with the Assiniboine river, discharges into the Red river of the north. Its valley is heavily timbered, and is 200 to 300 ft. below the level of the surrounding plains. Sheep and cattle raising are the chief industries of this region. A tributary of Mouse river, Des Lacs river, has

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a valley 75 m. long, with an abundance of coal and wood. The Missouri slope or coteau country is w. of the divide between the James and the Missouri rivers, and comprises natural meadows, lake lands, knolls, rolling hills, and sloping vales. It is particularly rich in native grasses; is adapted to horse, cattle, sheep, and hog raising, as well as to cereal and root crops; and is noted especially for the abundance and variety of its wild roses. The w. N. D. tract, often misleadingly called the w. Missouri country, differs materially from the e. portion of the state; has widely separated hills and broad valleys, with numerous buttes; is watered by the Heart, Knife, Cannon Ball, Green, Sweetbriar, Curlew, and Little Missouri, and other rivers; and has earlier seasons and less snow than the same latitude e. of the James river. Coal, and mineral and vegetable deposits, are abundant. The Missouri river enters N. D. in Allred co., lat. 48° n., flows e. and s., and passes into S. D. at the junction of Emmons, Campbell, and Bozeman counties, about the centre of the s. boundary of N. D. Nearly midway between it and the Red river is the James (formerly Dakota) river, which flows in a generally s. direction from Wells co., and through N. D. and S. D., to the Missouri river at Yankton. The Red river of the north, in whose valley are the great wheat farms of Manitoba, Minn., and N. D., forms the entire e. boundary of North Dakota.

Geology.—The principal mineral resource of the state is lignite or brown coal, the measures of which extend beneath the whole country w. of the Missouri river, and for a considerable distance e. of that river. Mining is carried on in Morton, Stark, Hettinger, McLean, Emmons, and Wells counties, and in several other counties w. of the Missouri and Mouse rivers; and in many places the croppings are so exposed that the settlers mine their own fuel with pick and shovel. Salt, limestone, and hydraulic lime are abundant in the Red river region; natural gas has been developed at Blunt, Fargo, and Jamestown; excellent cream-colored bricks are made at Dickinson, Stark co.; and clays for brick-making and pottery are found in many places. The valley of the Red river shows glacial drift beneath lake mud; and the country between it and the Bad Lands gives evidence, in railroad cuttings, of the action of large bodies of water, modifying the drift, sorting it into stratified beds of sand and gravel, and depositing sediment similar to the loess of Iowa and Missouri.

Climate.—The general elevation of the state, 1,000 to 2,500 ft. above sea-level, insures a clear atmosphere and immunity from malarial and pulmonary disorders. In winter the weather is cold, and the air dry and invigorating; there is no rain; snow lies crisp and hard under foot; heavy storms are less frequent than in O. or N. Y.; blizzards rarely occur; and the season breaks in March. In summer the weather is warm by day and cool at night. Autumn is a delightful season, usually

permitting plowing till the middle of Nov., and extending far into Dec. The mean annual temperature, shown by records in the U. S. signal offices at four of the most widely separated stations, is—Pembina 34.4°, Fargo 37°, Bismarck 39.4°, Fort Buford 38.7°; and the annual rainfall—Pembina 21.91 in., Fargo 27.17, Bismarck 20.10, Fort Buford 13.91: and the snowfall ranges from 5½ to 7¾ inches.

Agriculture.—The valley of the Red river of the north, famous the world over for its marvellous production of wheat, also of corn, rye, oats, and hay, comprises more than 22,000,000 acres, being 222 m. long by 156 m. wide, and extending about an equal distance e. into Minn., w. into N. D., s. to a point near the centre of the boundary-line between Minn. and the Dakotas, and n. as far as Winnipeg, cap. of Manitoba. In their portion of this enormous farm, the Dakotas together raised (1881) 8,892,000 bushels of wheat alone. The special territorial census (1885) reported the number of farms at 78,362; acres in farms 16,842,412; average size of farms 205 acres; average value \$1,911; wages paid during the year \$5,949,082. The crops were: wheat 27,913,000 bushels; corn 15,345,000; oats 13,229,000; buckwheat 51,466; rye 196,750; potatoes 2,700,000; hay 1,375,000 tons; milk 1,860,358 gallons; cheese 116 557 lbs.; and eggs 5,852,426 dozen. In 1887 the wheat crop rose to 60,000,000 bushels—fully one-seventh the entire wheat crop of the country—and the corn crop to 27,000,000. To handle this vast production, there were 344 elevators, and 306 warehouses with aggregate capacity 13,843,000 bushels, of which 206 elevators, and 54 warehouses with aggregate capacity 9,012,000 bushels, were in N. D. In 1888 N. D. had 6,604,791 acres in farm lands, of which 353,451 acres were under fence, and 3,344,053 under cultivation; value of farms and improvements \$42,341,539; value of farming implements and machinery \$2,819,806; acreage sown and crop yield: wheat 2,161,429 acres, 21,051,598 bushels; corn 18,966 acres, 277,441 bushels; oats 390,018 acres, 11,362,174 bushels; rye 1,093 acres, 17,402 bushels; barley 72,725 acres, 1,847,894 bushels; potatoes 13,249 acres, 1,368,847 bushels; flax 27,361 acres, 200,068 bushels. Both acreage and crops were largely increased 1890: wheat 2,655,991 acres, 26,721,660 bushels; corn 30,022 acres, 1,000,175 bushels; oats 450,563 acres, 9,746,093 bushels; rye 3,167 acres, 45,487 bushels; barley 128,631 acres, 2,760,902 bushels; potatoes 16,119 acres, 1,401,130 bushels; flax 57,511 acres, 495,202 bushels; value of garden products \$43,744; value of poultry and eggs sold \$119,565; cheese 72,689 lbs.; butter 3,301,159 lbs.; and hay 61,967 acres, 62,431 tons tame hay cut, and 692,576 tons prairie hay cut. In 1900 there were reported 45,332 farms covering 15,542,640 acres, of which 9,644,520 were improved and 5,898,120 unimproved, and all farm property, including buildings, implements and machinery, and live stock, was valued at \$255,266,75

Manufactures.—In 1880 there were 251 manufacturing

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establishments in the two Dakotas, employing capital \$771,428, and yielding products valued at \$2,373,970; the gold and silver mines had product worth \$3,200,000; and 26,000 tons of coal were mined. In 1885, exclusive of gold and silver mining, there were 257 establishments, employing capital \$16,677,537, paying in wages \$1,408,336, yielding products valued at \$6,593,218. The most important establishments were: flour and grist mills 85, cap. \$2,189,400, wages \$231,484, product \$3,182,364; saw-mills 33, cap. \$85,300, wages \$58,910, product \$179,082; brick-works 28, cap. \$145,250, wages \$88,623, product \$195,075; breweries 17, cap. \$528,150, wages \$71,992, product \$392,095; creameries 16, cap. \$63,737, wages \$33,190, product \$329,157; railroad car-shops 6, cap. \$625,000, wages \$251,272, product \$315,000; beef and pork packing 6, cap. \$449,000, wages \$94,420, product \$772,200. There were also 18 gold and 1 copper mining and stamping establishments, with aggregate capital of \$11,972,000, and paying in wages \$228,250. In 1890 the largest and most important industry in N. D. proper was the manufacture of flour and grist-mill products. There were reported: mills of more than 200 barrels daily capacity in 10 cities and towns, which employed capital \$574,000, and yielded products valued \$1,950,000; mills of less than 200 barrels daily capacity in 23 cities and towns, which employed capital \$360,000, and yielded products valued \$1,057,000. The manufacture of butter in creameries was a noticeably growing industry; creameries in 11 cities and towns employed capital \$101,000, and yielded products valued \$323,000. The principal saw-mills in the state are at Grand Forks, the logs being floated on the Red river from the Minn. pineries. In 1900 there were reported 1,130 manufacturing establishments employing \$5,396,490 capital and 2,398 persons, paying \$1,222,472 for wages and \$5,615,793 for materials used, and yielding products valued at \$9,183,114.

Railroads.—In 1880 there were 1,787 m. of main and 132 m. of side tracks in Dak. Terr.; total value of railroad property \$17,574,583. In 1890 there were two great transcontinental lines crossing N. D. from e. to w., with many branches, and several other lines penetrated it from the s., the whole forming invaluable means of interstate traffic. The total mileage of the five great railroad systems in the state was 2,044.22—viz., the Northern Pacific 814.35; the St. Paul Minneapolis and Manitoba 998.02; the Minneapolis St. Paul and Sault Ste. Marie 99.01; the Chicago Milwaukee and St. Paul 117.94; and the Chicago and Northwestern 14.90. The federal govt. made but two grants of public land in the entire territory to aid railroad extension, of which the Northern Pacific railroad in N. D. received the largest amount, 10,000,000 acres. In 1901 there were in N. D. 2,932 m. of railroads, 122 m. having been constructed during the previous year.

Religion.—In 1887 there were nearly 509 churches and preaching-stations of all denominations in Dak. Terr.

Reports of the leading denominations 1890 for N. D. alone showed: Bapt.: 1 state convention, 2 associations, 41 churches, 22 ministers, 1,350 members, 34 Sunday-schools, 223 officers and teachers, 1,579 scholars, church property valued \$33,000, aggregate contributions \$17,076; Congl.: 1 association, 50 churches, 26 ministers, 1,412 families, 1,194 members, 2,440 Sunday-school members, contributions \$21,753; Meth. Episc.: 1 conference, 3 districts, 58 churches, 39 travelling and 31 local preachers, 21 parsonages, 4,315 members, 116 Sunday-schools, 791 officers and teachers, 4,755 scholars, value of church property \$113,450, parsonages \$24,600, contributions—benevolence \$5,793, ministerial support \$33,683; Presb.: 1 synod, 3 presbyteries, 87 churches, 46 ministers, 2,842 members, 78 Sunday-schools, 498 officers and teachers, 3,645 scholars, contributions, congregational, \$23,133; Prot. Episc.: 1 missionary district, 44 parishes and missions, 1 bp., 12 other clergy, 713 communicants, 129 Sunday-school teachers, 1,649 scholars, 34 parish school-teachers, 825 parish pupils, total contributions \$41,168; Rom. Cath.: 1 diocese, 60 churches, 81 chapels and preaching-stations, 1 bp., 33 priests, 2 academies, 12 parochial schools, 1 hospital, 3 Indian missions, 3 convents, and estimated Rom. Cath. population 30,000.

Education.—The state constitution declares that the legislative assembly shall make provision for the establishment and maintenance of a system of public schools which shall be open to all children of the state and be free from sectarian control; that this system shall be uniform, and extend from the primary grade to and including the normal and collegiate courses; and that all educational institutions for the support of which lands were granted to the state, or which are supported by a public tax, shall remain under the absolute and exclusive control of the state. The supt. of public instruction, gov., atty.gen., sec. of state, and state auditor were constituted a board of univ. and school lands; and it was provided that no public lands should be sold for less than \$10 per acre. The federal grant of public lands for educational purposes, on the admission of the state into the Union, was 1,280 acres in each township, 2,000,000 acres in all. As the terr. had raised by taxation and expended on its public schools \$10,000,000 in the five years preceding the creation of the two states, N. D. entered the Union with 1,362 public schools, employing 1,741 teachers. Besides the common schools, all the towns have graded and high schools, the state has a univ. at Grand Forks, and there are denominational colleges at Tower City (Bapt.), Fargo (Congl., and Rom. Cath.), Jamestown (Presb.), and Grand Forks and Bismarck (Rom. Cath.). The graded schools of Fargo, Grand Forks, Jamestown, Bismarck, Lisbon, and Wahpeton employed (1889) 64 teachers, and had attendance of 3,345 pupils in an enumeration of 4,090 children of school age. The Univ. of N. D., at Grand Forks, was chartered

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1883, opened 1884, and reported (1901-2) 19 professors and instructors, 181 male and 117 female students, 4 years' college course, 10,000 vols. in the library, scientific apparatus and library valued at \$20 000, grounds and buildings \$100,000, productive funds, \$100,000, Webster Merrifield, M.A., president. Jamestown Col. (Presb.) was chartered 1883 and opened 1886, and reported 7 professors and instructors, 35 male and 53 female students, 500 vols. in the library, grounds and buildings valued at \$35,000; N. M. Cour, princ. Fargo Acad. (non-sect.) was opened 1885, and (1901) had 10 instruc., 70 male and 93 female stud., productive funds valued at \$37,000, 3,925 vols. in the library; J. H. Morley, A.M., LL.D., president. St. Bernard's College (Rom. Cath.), Grand Forks, was opened 1883, and reported 8 instructors, 125 male and 170 female students, 85 students in academic course, 500 vols. in the library, grounds and buildings valued at \$24,000; Mother Stanislaus, principal. There were also at Fargo a Concl. college, Presb. seminary, and Rom. Cath. academy.

Public Institutions.—The constitution provides for establishment and maintenance of the following charitable and educational institutions: State Univ. and School of Mines, at Fargo; Agricultural College, Fargo; State Normal School, Valley City; Deaf and Dumb Asylum, Devil's Lake; State Reform School, Mandan; State Normal School, Mayville; State Hospital for the Insane, and Home for the Feeble-minded in connection therewith, Jamestown; Soldiers' Home, Lisbon; Blind Asylum for Pembina co.; Industrial School and School for Manual Training, Ellendale; School of Forestry, in McHenry, Ward, Bottineau, or Rolette co., as may be determined by a special election; and a scientific school, or such other educational or charitable institution as the legislative assembly may prescribe, in Wahpeton.

Finances and Banking.—In 1885 the debt of Dak. Terr. aggregated \$568,700, nearly all of which was incurred for the erection of public, educational, and charitable institutions; and the valuation of real and personal property was \$106,499,549. At the close of 1887 the indebtedness was \$1,098,800, and the valuation \$157,084,365. In 1885 there were 35 national and 160 private banks, with aggregate capital \$4,514,000, surplus \$592,359. When the state of N. D. was admitted, it had a bonded indebtedness of \$539,807, and a net co. indebtedness of \$1,125,665—total \$1,665,472, or \$8 per capita. On 1902, July 1. the bonded debt was \$722,300; sinking fund, \$38 980. The assessed valuation (1902) was real estate \$85,433,334, personal property \$48,447,080; total \$133,880,414. On 1902, June 30. N. D. had 36 national banks in operation with \$1,775,600 in capital and \$292,036 surplus; and 158 state banks, \$1,759,000 capital and \$318,170 surplus. There were also 464 post-offices, of which 2 were second-class, 16 third, 446 fourth. 18 presidential, 52 money-order, and 2 postal-note offices. A joint agreement was incorporated in the constitutions of N. D.

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and S. D., providing for the assumption by the former of all indebtedness incurred by the terr. of Dak. for the purchase, construction, or maintenance of public institutions, grounds, or buildings within the boundaries of the state of N. D.; for the payment by N. D. of the Jamestown insane hospital bonds (\$266,000), the N. D. univ. bonds (\$96,700), the Bismarck penitentiary bonds (\$93,600), and the refunding capitol-building warrants (\$83,507); and for the payment by S. D. to N. D. of \$46,500, on account of the excess of terr. appropriations for permanent improvement of terr. institutions within the state of S. D., for the half-interest of N. D. in the terr. library, and in settlement of all claims of North Dakota against South Dakota.

History.—The terr. of Dak. was named after a family of Indian tribes, and was part of the La. tract bought by the United States from France 1803. The first national improvement of the section was the organization of Minn. Terr. 1849. A second part was appropriated to Neb. Terr. 1854, and from this part Dak. Terr. was organized 1861, extending from Minn. to the Rocky Mts., and from lat. $42^{\circ} 23'$ to 49° n. Two years later, all the portion of Dak. w. of long. 27° was utilized in forming Idaho Territory. In 1864 Montana was organized out of the n. part of e. Idaho, and Dak. was given the s. tract, comprising over 91,000 sq. m.; but it held the large increase of territory only four years, because the act of congress authorizing the formation of Wyo. Terr. provided that it should be given all but 2,000 sq. m. of the tract transferred to Dak. 1864. The cap. of Dak. was established at Yankton, where the first legislature assembled 1862, Mar. 17; in 1883 the cap. was transferred to Bismarck. Though a few settlements by the whites were made 1859, emigration to Dak. was checked by the Indian wars 1862–3, and subsequent isolated uprisings, and in 1870 the pop. aggregated only 14,181. The discovery of gold and silver in the Black Hills led to an early settlement of that region; but the great prairie lands of the n. did not attract capital and agricultural skill till 1875. A number of capitalists, large holders of the bonds of the Northern Pacific railroad (taken at par, but then worth only 10 cents on the dollar), determined to save as much as possible, and exchanged these bonds for a great block of the company's lands. 1875, Mar., Oliver Dalrymple, an experienced farmer of Minn., examined this treeless expanse, became convinced of its extreme value for wheat-growing, and made a contract with the owners to test the merits of the soil. He plowed 1,280 acres, and his first harvest (1876) yielded 32,000 bushels of the choicest grain. As soon as the results of this experiment became known, capital began seeking the depreciated railroad bonds and exchanging them for land, and labor flocked from adjoining states to preëempt govt. land. In 1879, May, June, and July, the sales of govt. land amounted to nearly 700,000 acres, and during that year 1,500,000 acres were taken on homestead, preëmption, and tree

claims. Mr. Dalrymple's success soon led to the laying out of the Grondin, Alton, Cass, Cheeney, and Smith-Dodge farms, nearly equalling the Dalrymple in size, and managed on the same comprehensive scale.

The 1880 census showed that the terr. had the requisite number of permanent inhabitants for its admission into the Union as a state; and an agitation for statehood soon began. The first important movement was 1882, Jan. 5, when a convention was held at Fargo, in which every co., excepting two in N. D., had representatives. Resolutions were adopted expressing the sentiment of the delegates—*first*, that the terr. should be immediately divided, the 46th parallel of lat. being suggested as a natural dividing-line; and, *secondly*, that the s.e. portion should be erected into a state. It was afterward voted expedient to have two territories and one state organized from the existing domain, the n. portion to be known as the terr. of Pembina, and the s. as the terr. of Lincoln. In the mean time, bills had been introduced into congress providing for the admission of a portion of the terr., and had been referred to the proper committees. In Feb., the house committee on territories reported a bill providing for the admission as a state, under the name of the state of Dakota, of the portion included within these boundaries: beginning at a point on the w. line of the state of Minn., where the 46th parallel of n. lat. intersects the same; thence s. along the w. boundary-lines of the states of Minn. and Io., to the point of intersection with the n. boundary-line of the state of Neb.; thence w. along the n. boundary-line of Neb., to the 27th parallel of w. long.; thence n., to the 46th parallel n. lat.; and thence e., to the place of beginning. The e. part of the s. half of the terr. was designated as the area of the proposed state. No decisive action was taken on this bill. During the winter 1881-2, the territorial legislature enacted a law providing for a constitutional convention, to frame a constitution and state govt. for the whole tract s. of the 46th parallel; but the gov. neither signed nor returned the bill. A convention was then publicly called to consider the question, and, in accordance with its recommendation, a convention was held 1883, Sep. 4-9, at Sioux Falls, which framed a constitution, and assigned to the new state that part only of the s. half lying e. of the 27th parallel w. long. Sep. 12, delegates from the n. section met in convention at Fargo, and protested against the action of the Sioux Falls body; but at the election in Nov. the constitution was ratified by a majority of 5,552. In 1884, Dec., a bill providing for the erection of the s. half into a state, under the name Dakota, and the continuance of the n. half as a terr., under the name Lincoln, passed the U. S. senate, but reached no decision in the house. The question as to whether it would be best to have the terr. admitted into the Union as two states or as one was submitted to popular vote 1887, Nov., and a majority of the voters favored a division on the 7th standard par-

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allel or the 46th parallel of lat. In 1889, Feb., congress passed an enabling act, providing for the assembling of conventions in the two sections of Dak., which should prepare constitutions for the proposed states, and appoint a joint committee to agree upon a division of the institutions, debts, records, etc., of the terr., which agreement should be incorporated in the constitution of each proposed state. These conventions were held July, at Bismarck and Sioux Falls; the proposed constitutions were ratified by the citizens Oct.; and Nov. 2 Pres. Harrison issued a proclamation declaring N. D. and S. D. to be states in the Union.

Prior to this date, Dak. had the govt. provided by congress for all the territories, except that, on account of its large area, it alone of all the territories had six justices of the supreme court, appointed by the president. The following is a list of terr. governors, with the terms for which they were appointed: William Jayne 1861-63; Newton Edmonds 1863-66; Andrew J. Faulk 1866-69; John A. Burbank 1869-73; John L. Pennington 1873-78; William A. Howard 1878-80; Nehemiah G. Ordway 1880-84; Gilbert A. Pierce 1884-86; and Louis K. Church 1886-90. Dak. had (1888) 10 U. S. land offices, 10 Indian agents, and one collector and 4 deputy-collectors of internal revenue. The legislature stood: council, 20 republicans, 4 democrats; house, 37 republicans, 7 democrats. 3 farmers' alliance, 1 independent. Pop. of Dakota terr. was (1860) 4,837; (1870) 14,181; (1880) 135,177; (1885) 415,623; (1889) about 550,000.

The new state govt. was organized by the election of John Miller, republican, gov., and of a legislature of 31 senators and 63 representatives, having a republican majority of 19 in the senate and 46 in the house.

Government.—The executive authority is vested by the constitution in a gov., elected for 2 years, salary \$3,000 per annum; a lieut.gov., elected at the same time and for the same term as the gov., salary \$1,000 per annum; and sec. of state, auditor, treas., supt. of public instruction, commissioner of insurance, 3 commissioners of railroads, atty.gen., and commissioner of agriculture and labor, all elected for two years, salary of all, excepting the last officer, \$2,000 per annum. Candidates for gov. and lieut.gov. must be qualified electors of the state, at least 30 years old, and residents of the state or terr. for 5 years next preceding the election. The gov. has power to disapprove and veto any item or items, or part or parts, of any bill making appropriations of money or property embracing distinct items; and the approved part or parts shall be law. In case of the death, impeachment, resignation, or disability of the gov., the duties of his office devolve on the lieut.gov.; and in case of the disability of the lieut.gov. while acting as gov., the sec. of state becomes chief executive pending the vacancy or disability. The legislative authority is vested in a senate of not less than 30 nor more than 50 members (31 in 1890), and a house of representatives of

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not less than 50 nor more than 140 members (63 in 1890). Senators are divided into two classes—one elected for two years, the other for four—one-half, as nearly as practicable, being elected biennially. Representatives are elected for two years. Senators and representatives receive \$5 per day and 10 cts. mileage; sessions biennial; limit of regular sessions 60 days. The legislative assembly is charged with causing an enumeration of the inhabitants to be made every 10 years, beginning 1895. The judicial authority is vested in a supreme court, district courts, co. courts, justices of the peace, and in courts specially created for cities, incorporated towns, and villages. The supreme court consists of three elected judges, classified by lot, so that one shall hold his office three years, one five years, one seven years—the one having the shortest term to serve, excepting when filling a vacancy, to be chief-justice. The court has appellate jurisdiction, co-extensive with the state, and holds three sittings annually, at Bismarck, Fargo, and Grand Forks. Vacancies in the court are filled till the next election by appointment by the gov. Till otherwise provided, the state is divided into six judicial districts, in each of which one judge shall be elected for four years. Each co. is provided with a co. court of one judge, elected for two years. Till further provided, supreme-court judges receive \$4,000 each per annum, and district-court judges \$3,000 each.

The constitution extends the right of suffrage, which shall be by secret ballot, to every male person, 21 years old and upward, who is a citizen of the United States; a person of foreign birth who shall have declared his intention to become a citizen at least one year and not more than six years prior to an election; or a civilized person of Indian descent who shall have severed his tribal relation two years next preceding such election—provided he shall have resided in the state one year, in the co. six months, and in the precinct 90 days, next preceding any election. No person under guardianship, convicted of treason or felony, or insane, is allowed to vote. Any woman qualified by the above terms of age, residence, and citizenship, may vote for all school officers and upon all questions pertaining solely to school matters, and be eligible to any school office. The constitution also guarantees perfect liberty of religious sentiment, and declares that no inhabitant of the state shall ever be molested in person or property on account of his or her mode of religious worship.

In all cases where a general law can be made applicable, no special law shall be enacted by the legislative assembly, nor shall it indirectly enact such special or local law by the partial repeal of a general law; but laws repealing local or special acts may be passed. Any combination between individuals, corporations, associations, or either, having for its object or effect the controlling of the price of any product of the soil, or any article of manufacture or commerce, or the cost of

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exchange or transportation, is prohibited and declared unlawful and against public policy; and all franchises granted to parties who violate this provision shall be deemed annulled and become void. The labor of children under 12 years of age is prohibited in mines, factories, and workshops. The exchange of 'black-lists' between corporations is also prohibited. The real and personal property of any woman in the state, acquired before marriage, and all property to which she may become, after marriage, in any manner rightfully entitled, is declared to be her separate property, and not liable for the debts of her husband. All flowing streams and natural water-courses shall forever remain the property of the state for mining, irrigating, and manufacturing purposes.

The state is divided into 31 senatorial and legislative districts, with one senator and from one to three representatives each. The first legislature elected Gilbert A. Pierce and Lyman R. Casey, republicans, U. S. senators; and Henry C. Hansbrough, republican, was elected representative-at-large in congress. The first judges of the supreme court of the state were Guy C. H. Corliss, chief-justice, and Joseph M. Bartholomew and Alfred Wallin, associate justices; and the first judges of the district courts were Charles F. Templeton, D. E. Morgan, William B. McConnell, W. S. Lauder, Roderick Rose, and Walter H. Winchester. The first U. S. district atty. was John Murphey; first U. S. marshal, D. W. Maratta; first pres. of the state senate, Lieut. gov. Alfred Dickey; first speaker of the house, David B. Wellman. N. D. has 39 counties.

Population.—(1890) 182,719; (1900) 319,146.

NORTHEAST AND NORTHWEST PASSAGES.

NORTHEAST AND NORTHWEST PASSAGES: navigable passages from Europe to eastern Asia—around the n. coast of Europe and Asia, or around the n. coast of N. America. The numerous and important discoveries made by the Portuguese and Spaniards in the southern latitudes of Asia, from about the beginning of the 16th c., and the reports which, on their return, they spread of the fabulous wealth of those regions, excited the other maritime nations of Europe to send out expeditions to the E. Indies for obtaining a share in the lucrative traffic till then monopolized by Spain. But Spain, then at the height of her prosperity, was not disposed to admit other nations to share her good fortune, and dealt so summarily with all intruders, having at that time the complete command of the Atlantic and Indian oceans, that her rivals were reluctantly compelled to abandon all trading in those seas. Unwilling, however, to lay aside their designs of opening a trade with the far-famed India and Cathay (as China was then called), they resolved to attempt to reach those regions by some other route. Two plans appeared feasible—one, to reach e. Asia by coasting along the n. of Europe and Asia, the *North-East Passage*; the other, by sailing w. across the Atlantic. The latter was attempted first by John Cabot 1497; but he found his progress barred by the American continent, or, at least, those parts of it known as Newfoundland and Labrador. Three years afterward, Gaspar de Cortereal and his brother made three several voyages in the same direction; and on reaching Newfoundland sailed n., but were stopped on the coast of Labrador, lat. 60° n.: both afterward perished, with all their followers. Several voyages were soon afterward made to discover if a passage for ships existed to the n. of America (the *North west Passage*), but without success; and the hardships which navigators were subjected to, in these inhospitable climes, caused the abandonment for the time of all further investigations in that direction.

Northeast Passage.—The search for a N. E. Passage was then vigorously prosecuted, England sending out the first expedition for this purpose 1553. It consisted of three ships, commanded by Sir Hugh Willoughby, and was fitted out under direction of the celebrated Sebastian Cabot; but on rounding the North Cape, one of the ships was separated from the others during a violent storm, and subsequently entered the White Sea, then unknown to western Europeans. The other two, under Willoughby, drifted hither and thither in the vast waste of water surrounding the pole, till the navigators sighted Nova Zembla. Being unable to land, they sailed back along the n. coast of Russia, and took up their winter quarters on the coast of Russian Lapland, where they were subsequently found frozen to death. Several other expeditions were, at different times, sent out by the English and Dutch, but none of them ever succeeded in penetrating further than the e. coast of Nova Zembla, though they rendered good service to geography by

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making accurate surveys of n. Europe and the adjacent islands of Spitzbergen, Nova Zembla, Waygatz, etc. It was long believed that the promontory which is the e. boundary of the Gulf of Ob was the *Tabis* of Pliny, and formed the n.e. corner of Asia; and this opinion, which received the assent of the famous Gerardus Mercator, tended greatly to encourage renewed explorations, as, according to it, the e. coast of Asia was not more than 400 m. from Nova Zembla. The following is a list of the chief expeditions for the discovery of the N. E. Passage:

Willoughby and Chancellor,	.	.	.	English,	.	.	1553
Burroughs,	.	.	.	"	.	.	1556
Pet and Jackman,	.	.	.	"	.	.	1580
Barentz, William (three expeditions),	.	.	.	Dutch,	.	.	1594-1596
Hudson, Henry { first expedition,	.	.	.	English,	.	.	1608
{ second expedition,	.	.	.	Dutch,	.	.	1609
Wood,	.	.	.	"	.	.	1676

In his third expedition, Barentz nearly reached Icy Cape, about long. 100° e., but was, with his crew, imprisoned by the ice, and died before the return of spring. Various important discoveries were made during this expedition, which proved that in favorable seasons a passage could be found to the eastward; but after the subsequent failures of Hudson and Wood, the attempt was abandoned in despair. The Russian govt. now took up the search, and, both by overland expeditions and by vessels starting from various points on the n. and e. coasts of Siberia, sought to discover a practicable passage. The chief of these expeditions were those of Behring 1741, which started from Petropulovski, and was stopped at the East Cape; of Shuluroff; and of Billings. In 1875 and 6, Prof. Nordenskjoeld reached the e. shores of the Gulf of Ob; and in July, 1878, a well-equipped Swedish expedition, under the same veteran explorer, attempted once more the N. E. Passage. The party successfully rounded Cape Severo or Tchelyuskin, the most northerly portion of the old world (in lat. $77^{\circ} 41'$ n.), and had nearly reached Behring's Strait when, Sep. 25, they were frozen in. Released 1879, July, they accomplished the passage without loss, and arrived at Yokohama Sep. 2. During the voyage and their winter of seclusion, they were indefatigable in scientific observation and research.

Northwest Passage.—Sebastian Cabot and the brothers Cortereal having failed in their attempts to round the n. coast of America, it was not till after several unsuccessful attempts had been made to find a N. E. Passage that investigations of the n. coast of America were resumed. As these investigations were carried on till within the last few years solely by the English, their prosecution till a definite result was arrived at came to be viewed as a point of national honor; and repeated expeditions were sent out long after it had been clearly shown that a N. W. Passage, when found, would be useless in a mercantile view. In all, more than 200 voyages were made in

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search of the N. W. Passage, so that only the most important of them can here be mentioned. The first expedition, after that of Calot, was sent out 1576, under Martin Frobisher, who made a second and third voyage in the two following years, but without any important discovery. 1585-88, northern enterprise received an impetus from the successful expeditions of Capt. John Davis. This navigator sailed up the strait which bears his name, as far as lat. 72° n., and reported open sea still further n.; he then surveyed the e. and w. sides of the strait, but without further important results. Henry Hudson (q.v.), who had previously attempted the N. E. Passage, followed in 1610, and discovered Hudson Strait and Bay, believing the latter to be an inlet of the Pacific Ocean, an opinion which was proved erroneous by the investigations of Button in 1612; the latter, however, on his return, put forth the equally erroneous opinion that the bay was closed in on all sides, except the two e. entrances. Button's account was not universally credited, and accordingly, 1615, Capt. Eylot, who had been one of Hudson's company, was sent out, accompanied by Baffin, the most skilful navigator and scientific observer of the time; but their first expedition, which was to Hudson's Bay, was without result. In their next voyage (1616), they sailed up Davis' Strait, reaching lat. 78° n.; and satisfying themselves by a very superficial investigation that there was no n. outlet, the bay (as it was then believed to be) was named in honor of its explorer, Eaffin's Bay. On their return southward, they coasted along the w. side, and discovered an opening to the w. which they named Lancaster Sound, but, believing it to be only an inlet, did not explore further. On his return, Baffin gave it as his decided opinion that no outlet to the w. existed from Baffin's Bay; and the attention of explorers was again directed to discover an outlet from Hudson's Bay. In 1619, the solitary attempt by other nations to aid in the search was undertaken by Jens Munk, a Dane, but he made no discoveries. The expedition of Fox and James, 1631, led to partial exploration of the channel since known as Fox Channel, the n. outlet to Hudson's Bay; and from that time the spirit of discovery slumbered till 1741. Between 1741 and 46, several expeditions were sent out to discover an outlet from the n.w. corner of Hudson's Bay, but their united researches satisfactorily proved that no such outlet existed. Owing to these disappointments, the search for a N. W. Passage was discontinued for more than half a century, notwithstanding the Brit. parliament had promised a reward of £20,000 to the fortunate discoverer. In 1818, the admiralty took up the search, and sent out Capt. John Ross and Lieut. Parry, who sailed up Davis' Strait, and ascended Lancaster Sound 30 m.; here Capt. Ross gave up the search, considering it to be hopeless. But this opinion was not agreed in by Parry, who was accordingly sent out in the following year, and succeeded in far outstripping all his predecessors in northern

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discovery. He entered Lancaster Sound July 30, and a few days afterward discovered a large inlet, 20 m. broad, which he named Prince Regent Inlet. After exploring this inlet some distance, he returned, and continued his course westward, as the ice allowed him, passing through a strait which he named after Sir John Barrow, the promoter of the expedition. Continuing westward, he reached long. 110° w., in Melville Sound, where he was stopped by the ice; and after wintering here, and giving names to the numerous islands, seas, and straits that he had discovered, returned to Britain, with the glory of having advanced 26° of longitude further w. than any previous explorer. On his arrival, he was welcomed with immense enthusiasm, and his discoveries imparted renewed energy to the half-dormant maritime enterprise of the British. There was now no doubt in what direction the N. W. Passage was to be sought, but Parry's second expedition (1821-23) was for the purpose of determining whether the Fox Channel was connected with the Arctic Sea of his previous voyage; it was, however, unsuccessful. A little before this time, the coast-line of N. America from Eklung's Strait to Point Turnagain, long. 109° w., had been fully traced, so that it remained only to find some navigable passage from Regent Inlet to this point, and the long-wished-for result would be attained. For this purpose, Capt. John Ross was sent out with an expedition 1829, and, after a laborious and difficult voyage up Prince Regent Inlet, reached a point only 200 m. from Point Turnagain. It was during this voyage that he discovered the magnetic pole. Dease and Simpson, 1828, extended the survey of the Amer. coast from Point Turnagain to within 90 m. of the magnetic pole; but the hopes of a channel between these points were dashed by the discovery made by Dr. John Rae, 1847, that Boothia (the land which bounds Regent Inlet on the w.) is a peninsula of the American continent. The unfortunate expedition of Sir John Franklin, it had been hoped, would settle the question of a N. W. Passage. It sailed from England 1845, May 19; and was seen last in Baffin's Bay. Franklin is believed to have sailed through Lancaster Sound, and ascended Wellington Channel to lat. 77° n., and thence returned southward, crossing Barrow Strait, and sailing down the channel (now called Franklin Channel) which separates n. Somerset and Boothia Felix from Prince of Wales Island, to the w., where, lat. 70° n., long. $98^{\circ} 20'$ w., his ships were beset with ice 1846, Sep. 12; and Franklin died 1847, June 11. The survivors abandoned the vessels 20 m. s.w. of this point, and perished in the attempt to reach the Amer. mainland. Many expeditions were sent out to search for the missing voyagers. One of these, under Collinson and M'Clure, sailed from Plymouth 1850, Jan. 20, and reached Behring's Strait in Aug. Sailing e. the following spring, M'Clure's ship became fixed in the ice, about 60 m. w. of Barrow Strait, and the crew were found by Sir Edward Belcher, sent to

NORTHERN LIGHT-HOUSES—NORTH HOLLAND.

their assistance 1852. Belcher, who had reached Melville Sound by the e. passage through Lancaster Sound, returned the same way; thus M'Clure and his company were the only ship's crew who had ever penetrated from Behring's Strait to Baffin's Bay. Lieut. Schwatka, U.S.N., led a party 1879-80, who accomplished a sleigh journey of 3,250 m., and proved that Franklin was really the discoverer of the N. W. Passage, and brought back relics of Franklin's expedition, including the bones of Lieut. Irving of the *Terror*. By the various English and American Franklin expeditions, the whole region n. of the Amer. mainland, as far as lat. 77° n. and long. 103° w., has been thoroughly explored, and various channels of communication between Davis' and Behring's straits have been discovered—e.g., the route by Hulton's Bay, Fox Channel, Fury and Hecla Strait, and Bellot Strait, into Franklin Channel, and thence by either the M'Clintock or the Victoria Channel; or the routes by Lancaster Sound, and the M'Clintock Channel, Prince Regent Inlet, or Prince of Wales Strait, to the open sea n. of Alaska: but all these routes are useless in a commercial view. See POLAR EXPEDITIONS.

NORTHERN LIGHT-HOUSES, COMMISSIONERS OF: under the laws of the United Kingdom, the body corporate which has under its management all the light-houses of Scotland and Isle of Man. In 1831, the number of light-houses under charge of the commission was 62, besides buoys and beacons. The whole system is remarkably well organized, a work traceable largely to the late Robert Stevenson (q.v.).

NORTHERN LIGHTS: see AURORA BOREALIS.

NORTHFIELD SEMINARY for Girls: see MOODY, DWIGHT LYMAN.

NORTH GERMAN CONFEDERATION: see GERMANY.

NORTH HOLLAND CANAL: channel 50 m. long, 124 ft. broad at the water-level and 31 ft. at the bottom, of depth sufficient to allow the passage of vessels drawing 18 ft. It connects the city of Amsterdam and the Helder, and was constructed to avoid the difficulties, delays, and dangers to which the large merchant-vessels of modern times were subjected in reaching Amsterdam through the shallow, and in many places obstructed, channels of the Zuyder Zee. The details were planned by Herr Blanken, and the great work was completed 1825. On account of ice, the canal is not always available in winter, and it is not large enough for the passage of some of the ships now in use. It has been supplemented by the North Sea Canal (q.v.).

NORTH SEA CANAL—NORTH SEA.

NORTH SEA CANAL, or AMSTERDAM CANAL: a canal furnishing the city of Amsterdam direct communication with the North Sea. The insufficient facilities furnished by the North Holland Canal (q.v.), and the hope of reclaiming from the sea a large tract of land which would then become valuable, led to the undertaking 1863. It was decided to pass through the lake Y, the land between it and the Wijkerveer, through the latter, and across the intervening land to the sea. The Y was closed at its e. extremity, at the Zuyder Zee, by a dam a mile long, supplied with triple locks. In the lakes, embankments were built to form the sides of the canal; and the sand-dunes, for a distance of about four m., were cut through, making the total length a little more than 14 m. The channel is about 195 ft. wide at the water-level, 90 ft. at the bottom, 25 ft. deep. A double lock, about 400 ft. long, 60 ft. wide, 25 ft. deep, was built about 200 rods from the sea-shore; and an artificial harbor was made, inclosing about 250 acres between massive concrete piers. Total expense was about \$15,000,000. The ceremonies of opening the canal for public use were participated in by the king 1876, Nov. 1. As the canal receives the drainage of the Y and the Wijkerveer, it has made available for cultivation more than 13,000 acres of land formerly covered with water. Immense steam-pumps carry the surplus water into the Zuyder Zee.

NORTH SEA, or GERMAN OCEAN (anc. *Germanicum Mare*; Ger. *Nord See*): arm of the Atlantic Ocean which separates the British Islands on the w. from the European continent on the e.; 700 m. in extreme length (n. to s.), about 400 m. in greatest breadth; not less than 140,000 sq. m. The great commercial highways from the N. S. to the Atlantic are by the Pentland Firth and the Strait of Dover; while on the e. it communicates with the Baltic by the Skagerrack, the Cattegat, Sound, and Great and Little Belts. Along its s.e. and s. coasts, the shores are low, and are skirted by sand-banks formed by the sand deposits carried to the sea by the waters of the Elbe, Weser, Rhine, and Scheldt, the principal rivers that flow from the e. into this sea. The shores of England, especially in the s., also are low, and here also sand has accumulated, though not nearly to the same extent as on the continental coasts. The chief British rivers that fall into the N. S. are the Thames, Ouse, Humber, Tyne, Tweed, Forth, and Tay. Besides the sand-banks on the coast, already referred to, others extend to the middle of the sea-bed, similar in their origin to those on the coasts, and occupying altogether about three-fourths of the entire area. Of these, the principal are the bank running n.e. from the mouth of the Firth of Forth 110 m.; the bank extending n.w. from the mouth of the Elbe about the same distance; the Doggerbank (q.v.), etc. These sand-banks, with the storms and fogs common in the N. S., render its navigation unusually dangerous. Another peculiarity of the bed of this sea is the number

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of 'holes' which have been found in it. Of these the most remarkable are the Little Silver Pit off Holderness in Yorkshire, England; and the North-northeast Hole, 8 leagues further east. Little Silver Pit is 25 m. long, and half a mile to two m. wide. At its edges there is depth of 50 to 80 ft. of water, but the 'hole' has a depth of 330 ft. In the n., along the Norwegian coasts, the shores are steep and rocky, and there is a depth of about 190 fathoms. The depth (31 fathoms on an average) increases from s. to n. The currents of this ocean are extremely various, and demand of the navigator great caution. The prevalence of s.w. winds gives the currents a general tendency toward the n.e. On the s.w. coast of Ireland, the great tidal wave of the Atlantic is broken into two portions, one of which, coursing up the Channel, passes through the Strait of Dover; while the other, sweeping n., passes round the n. of Scotland, and then s. along the e. coast of Britain, and meets the southern wave off the coast of Essex. The n. portion of the tidal wave spreads over the whole German Ocean, and though on its entrance into the N. S. it is only 12 ft. in height, it rises in its progress southward, as the sea becomes narrower, in the same way as the *Bore* (q.v.) is formed in a contracting estuary. In the estuary of the Humber, it rises to the height of 20 ft. This sea yields immense quantities of fish, the most important kinds being cod, hake, ling, turbot, sole, mackerel, and herring, also lobsters. The fisheries employ many thousand people. On all available points of the coasts, light-houses have been erected, and there are numerous floating-light vessels moored to detached banks. The traffic on the N. S. is enormous, as this sea borders on countries whose inhabitants have from earliest times been famous on the seas.

NORTHUMBERLAND, *nawr-thūm'bér-land*: most northern county of England; bounded e. by the North Sea, and n.w. by the Scottish counties of Roxburgh and Berwick; 70 m. extreme length, 53 extreme width; 1,290,312 acres, or 2,016 sq. m.—fifth in size among English counties. The surface of the county has a rugged, and especially in the w. and s.w. a naked and barren, aspect. The Cheviots run along the w. border and send out spurs toward the e., which, gradually declining, are separated by fertile valleys widening as they approach the coast. About one-third of the county is moorland, and along the Cumberland border the broken and bleak-looking hills are valuable for their lead mines. Allendale, centre of the lead-mining district, is the highest inhabited spot in England, 1,400 ft. above sea-level. The inclination of the surface toward the e. is indicated by the direction of the rivers Alne, Coquet, and North Tyne, which with the Tyne and Till are the principal rivers. The Tweed forms the boundary of the county on the n. for about 5 m.; and the s. boundary is formed in part by the Derwent and Tyne. The climate is cold, but milder on the coast than amid the hills, which, however, produce sufficient herbage for large flocks of 'Cheviot'.

NORTHWESTERN UNIVERSITY.

sheep. The principal agricultural tracts are along the coast, and inland several miles along the river valleys. In these districts, the soil is mostly a strong, fertile, clayey loam, productive in wheat, barley, beans, and clover. Agriculture is pursued on the most improved methods, and cattle, chiefly short-horned, are extensively reared. The s.e. portion of the county is part of the great Northumberland and Durham coal-field, which produces about 25,000,000 tons annually. There are more than 100 pits in operation in the county. N. is traversed by the Newcastle and Carlisle, Northeastern, and Border Counties railways. The county town is Alnwick (q.v.).—Pop. of N. (1871) 386,646; (1891) 319,730; (1901) 388,059.

NORTHUMBERLAND, DUKES OF: see PERCY, FAMILY OF.

NORTHUMBRIA, *nawrth-ūm'brī-a*: largest kingdom in the Saxon heptarchy, formed by the union of the two kingdoms Bernicia and Deira, under Prince Ida, 547. As its name indicates, it embraced the region n. of the Humber and extended to the Firth of Forth. It was divided after the death of Ida, but re-established as one kingdom by Ethelfrith 593, and became the leading power in Britain under Oswald 634–42. Its extinction occurred under Egbert 827, when, united with Wessex and minor states, it was merged into a kingdom to which the name England was first applied. The modern co. Northumberland derives its name from the kingdom, many times larger than itself.

NORTH WALSHAM, *wawls'ham*: small market-town of England, county of Norfolk, on an acclivity on the right bank of the Ant, 14 m. n.n.e. of Norwich. Pop. about 3,200.

NORTHWESTERN UNIVERSITY: a university under Methodist auspices, in Evanston, Ill., chartered 1851, opened 1855. It has a campus of 45 acres of oak grove on Lake Michigan, 12 m. n. of Chicago. The buildings are: University Hall, built 1869; Hall of Science; preparatory school edifice; observatory, gymnasium, and dormitory. Heck Hall and Memorial Hall are buildings of the Garrett Biblical Institute, named from the founder, Mrs. Eliza Garrett, and serving as a theol. dept., though held by a separate corporation. It has a Norwegian-Danish department. The College of Law, and that of Medicine, of Pharmacy, and of Dentistry, with two associated hospitals, are in Chicago. Near the university and connected with it is a Woman's College; also a Swedish theological school. There is a Conservatory of Music. The College of Liberal Arts has four courses: classical, philosophical, scientific and in modern literature. The library has over 68,000 vols. and 30,000 pamphlets, and embraces the rich classical library of Dr. John Schultze of the Prussian ministry of public instruction, presented by Luther L. Greenleaf; it has a library fund of \$60,000, given by Orrington Hunt. The univ. is now associated with the Chicago Astronomical Soc. in care of the Dear-

NORTHWEST TERRITORY.

born Observatory, with its famous telescope of $18\frac{1}{2}$ in. aperture of object-glass. At the close of the college year 1902 the university had 322 professors and instructors; 3,200 students in all departments; endowment funds aggregating \$2,950,000; grounds and buildings worth \$2,096,000; scientific apparatus, machinery and furniture worth \$140,000; library worth \$75,000 and income, \$389,960. Since organization the university had graduated 8,636 students. Edmund J. James, Ph.D., was president. The chief leader in the enterprise was the Hon. John Evans, M.D., after whom the town was named. His theory, whose wisdom seems proved by success, at least as regards western colleges, was to derive an endowment from increase in the value of lands. Accordingly, 400 acres of low-priced farms in one body were secured, and the result has been a large endowment.

NORTHWEST PROVINCES: a lieutenant-governorship of British India, occupying the upper basin of the Ganges and Jumna, extending from Bengal to the Punjab. Oude, formerly an entirely separate administration, is now under the lieut. gov. of the N. W. P.; but in respect of its courts and lands, is still a distinct province. The divisions of the N. W. P. are Meerut, Agra, Rohilkund, Allahabad, Benares, Jhansi, Kumaon, and the four divisions of Oude—Lucknow, Sitapur, Fyzabad, Rai Bareilly. (See most of these titles: also OUDE.) Total area under direct British administration (with Oude) 106,111 sq. m.; pop. (1901) 14,958,557. The native states have a further area of 5,125 sq. m.; pop. (1901) 802,097. Cap. Allahabad.

NORTHWEST TERRITORY OF CANADA; formerly known as the **INDIAN TERRITORIES OF CANADA:** bounded e. by Manitoba and Keewatin, s. by the U. S. frontier, w. by British Columbia and Alaska. It is divided into Assiniboia, Saskatchewan, Alberta, and Athabasca. It was organized 1875, under a gov. and council of five appointed by the Dominion gov't. When any dist. has a pop. of 1,000, the inhabitants have power to elect a member of council; and when the pop. becomes sufficiently numerous, the council becomes the legislature. The cap. (formerly Battleford) is, since 1882, Regina, 80 m. s.w. of Qu'Appelle. Parallel to the great chain of lakes, a belt of coniferous forest, 500 m. in width, extends across the whole territory. N. of this is a most desolate region, home of the musk ox and summer resort of the reindeer; but the forest extends along the Mackenzie river close to the Arctic Ocean. Between the forest and the U. S. frontier lies a great region of plain and prairie—a country of gently sloping hills and large treeless expanses. Along the n. portion lies the celebrated Fertile Belt of the Saskatchewan, stretching 800 m. from Lake Winnipeg, and 40 to 150 m. in breadth. Together with Red River valley, this is the finest wheat-growing

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district in w. America. The region between this and the 'American desert' is of mixed character, much of it rich soil well suited for grazing purposes, but generally deficient in rainfall. It has been estimated that the plain and prairie region covers an area of about 200,000,000 acres, of which it is believed that 80,000,000 consist of first-class soil, another 80,000,000 of mixed agricultural and grazing lands, and 40,000,000 of lakes and marshes, with dry tracts and pastures. The Indians, still the largest portion of the inhabitants, have made over their rights in the land to the govt. on the same conditions as those which were applied to what was the Hudson's Bay Company (q.v.) territory. Settlement has begun in the e., and is proceeding rapidly from Manitoba westward. The climate is severe in winter, the thermometer falling to -40° . Pop. (1901) 158,940.

NORTON, *nawr'ton*, ANDREWS, D.D.: biblical scholar and Unitarian theologian: 1786, Dec. 31—1853, Sep. 18; b. Hingham, Mass. He graduated at Harvard 1804; was appointed 1809 tutor in Bowdoin College, 1811 mathematical tutor at Harvard, and 1813 librarian of the univ.; and succeeded Dr. Channing as lecturer on biblical criticism and interpretation. In 1819 he was appointed Dexter prof. of sacred literature, which office he retained until failing health compelled his retirement 1830. Dr. N. was, after Dr. Channing, the most distinguished exponent of Unitarian theology, a clear and perspicuous lecturer, an able and conservative critic, and a voluminous writer. Rejecting the dogma of the Trinity, and protesting against Calvinism, he equally opposed the school of Theodore Parker and the naturalistic theology. Besides his contributions to the *General Repository and Review*, the *North American Review*, *Christian Examiner*, he published (1833) *A Statement of Reasons for Not Believing in the Doctrine of the Trinity*; (1837-44, Boston, 3 vols.; 2d ed. Cambridge 1846; abridged ed. 1867, 1 vol.) *Evidences of the Genuineness of the Gospels*—a work of high authority among scholars in Amer. and Gr. Britain; (1839) *On the Latest Forms of Infidelity*; and left some poems and a translation of the gospels. His poetic gift appeared in hymns which have been widely esteemed. He died at Newport, R. I.

NORTON, the Hon. CAROLINE ELIZABETH SARAH: English poet and novelist: 1808-1877, June 14; daughter of Thomas Sheridan, and one of the three beautiful granddaughters of Richard Brinsley Sheridan. Her father died while she was a child, and her education, which embraced an unusually varied course of studies, was superintended by her mother. In 1827 she married the Hon. George Chappel N.—an unhappy marriage, characterized by the wife's repeated protests and the husband's repeated pledges of amendment, with her quitting his house once and again in indignant grief. In 1831 she met Lord Melbourne, then prime-minister, and the friendship which succeeded was needlessly made the occasion for some scandalous rumors, of which Mr. N. availed

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himself by bringing an action against Lord Melbourne. The jury gave verdict for the defendant without leaving the box. Mrs. N. died two years after her husband, having been for some months the wife of Sir W. Stirling-Maxwell. Her chief works are: *The Sorrows of Rosalie* (1829); *The Undying One* (1830); *The Child of the Islands* (1845); *Stuart of Dunleath*, a novel (1847); *English Laws for Women in the Nineteenth Century* (1854); *The Lady of Garaye* (1832); *Lost and Saved*, a novel (1863); and *Old Sir Douglas* (1863). Her prose works, several of which depict the wrongs incident to the position of women, are written with considerable cleverness and vigor; they are facile in style and fresh in incident, and mostly have strong reformatory intent. Her verse, though overstrained and stogy in sentiment, has numerous admirers, and shows some of that brilliancy for which the Sheridans have been famous.

NORTON, CHARLES ELIOT: born Cambridge, Mass., 1827, Nov. 16; son of Andrews N., D.D. After graduating from Harvard 1846, he obtained a practical knowledge of the E. India trade in a Boston store. He went to India 1849, spent some time in travel, and on his return trip made the tour of Europe. He assisted Dr. Ezra Abbot in editing some of his (N.'s) father's works 1855, after which he spent a year or two in Europe. During the civil war, he was editor of the Loyal Publication Society's papers, and 1834-68 was one of the editors of the *North American Review*. In the latter year he went again to Europe, where he remained five years. Among his works are: *Considerations on Some Recent Social Theories*; *The New Life of Dante*; *Notes of Travel and Study in Italy*; *The Soldier of the Good Cause*; *William Blake's Illustrations of the Book of Job*; and *Historical Studies of Church-building in the Middle Ages*.

NORTON, JOHN: 1606, May 6—1663, Apr. 5; b. Stortford, England. He graduated from Cambridge; and after serving as curate at Stortford, became a Puritan, removed to the Plymouth (Mass.) colony 1635, to Boston the following year, and soon became minister at Ipswich. He was a leader in the convention that formed the Cambridge platform 1648, and four years later became associate pastor of the First Church (Congl.) in Boston. With Gov. Bradstreet, he was sent to England 1662 by the colony, to present a petition to the king. The people were dissatisfied with the results of the mission, and N. became very unpopular. He was author of the first book written in Latin in this country, of a book in opposition to the Quakers, and of various other works. He died at Boston.

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NORWALK, *nawr'wōk*: township in Fairfield co., Conn., including the city of N., two or three villages, and the city of South N. It is on Long Island Sound, the New York, New Haven and Hartford railroad, a branch of the Housatonic, and a terminus of the Danbury and Norwalk railroad; 42 m. n.e. of New York, 60 m. s.w. of Hartford. The N. river passes through the town and enters the Sound. There is a safe harbor of considerable size; and at low tide, vessels drawing 6 ft. can pass up the river. Steamers and other vessels run regularly between N. and New York. There are 16 churches, several good public schools and 2 boarding-schools, a public library, 4 public halls, 2 opera-houses, 5 weekly newspapers, 3 national and 3 savings banks, and 5 hotels. There is a street railroad, a complete system of water-works, gas-works, and an organized fire department. Many of the streets are paved, there are numerous shade-trees, and from the low hills within the town limits very fine views of the adjacent country and of the Sound are obtained. The bay is a favorable place for oysters, which are grown and shipped in great quantities. About \$2,000,000 capital is said to be invested in this industry. There are large foundries and iron-works, a paper-mill, several woolen-mills, a pottery, a large lock factory, three shoe-shops, seven fur-hat factories, and the most extensive straw-hat works in the country. There are also carriage-shops, machine-shops, ship-yards, chemical works, and extensive greenhouses and grounds in which flowers are grown for the New York market. There are many fine residences; and in South N. many people doing business in New York have their homes.—The site of N. was bought from the Indians 1640, but a permanent settlement was not made till 1651. According to a tradition, the purchase included the land between two rivers extending a distance of one day's walk north from the sea. The tribe from which the land was obtained was called Northwalk or Norwalk; and the river, and finally the settlement, received the name. N. was incorporated as a town 1653. During the revolution, the town was burned by the Hessians. It was incorporated as a city in 1893, and South N. received a city charter 1870. Pop. (1880) 13,956; (1890) 17,749; (1900) 19,932. Pop. South N. (1900) 6,591; N. city (1900) 6,125.

NORWALK: city, cap. of Huron co., O., on the Lake Shore and Michigan Southern and the Wheeling and Lake Erie railroads; 56 m. from Toledo and the same distance from Cleveland. There are 14 churches; graded schools; one daily and five weekly papers, one of the latter printed in German; two national banks, a state bank, and a private savings bank. The manufactures include organs, knitting-machines, sewing-machines, plows, and shoes. There are also breweries, tobacco factories, grist-mills, and lumber-mills, and railroad repair shops. The streets are paved, there are water-works, and the city is lighted with gas. It is in a fine agricultural region. Pop. (1870) 4,498; (1880) 5,704; (1890) 7,195; (1900) 7,074.

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NORWAY, *nawr'wā* (Norwegian, *Norge*): western portion of the Scandinavian peninsula, which, with Sweden, forms one joint kingdom; 57° 58'—71° 10' n. lat., and 5°—28° e. long. It is bounded e. by Sweden and Russia, and on every other side is surrounded by water, having the Skagerrack to the s., the German Ocean to the w., and the Arctic Sea to the n.; length about 1,100 m., greatest width about 250 m.; but between the lats. 67° and 68°, it measures little more than 25 m. in breadth. The following table shows the area and pop. of the 20 amts into which N. is divided as given in the last census of January, 1891:

AMTS.	Eng. Sq. M.les.	Pop. 1901.	Pop. 1900.
Smaalenene	1,599	120,133	136,886
Akershuus.....	2,054	98,973	116,228
Christiania	6	150,444	227,626
Hedemarken	10 618	118,998	126,182
Christians	9,792	107,793	116,280
Buskerud.....	5,736	104,723	112,676
Jarisberg and Laurvik.....	895	101,001	104,554
Bra sberg.....	5,863	91,815	99,052
Nedenæs.....	3,603	81,068	79,935
Lister and Mandal.....	2,804	78,789	81,567
Stavanger.....	3,531	117,078	127,592
Søndre Bergenhuus.....	6,024	128,125	135,752
Bergen (town of).....	3	53,686	72,251
N. Bergenhuus	7,145	87,663	89,041
Romsdal	5,785	127,773	136,137
S. Trondhjem.....	7,188	122,563	135,382
N. Trondhjem.....	8,762	81,134	83,433
Nordland.....	14,655	131,837	152,144
Tromsö.	10,132	65 090	74,362
Finnmarken	18,295	29,110	32,800
Total.....	124,495	1,999,176	2,229,880

Of the total pop. (1891) 474,129 lived in towns. Pop. (1865) 1,701,756; increase (1865-1900) 538,124.

The Scandinavian peninsula consists of more or less connected mountain masses, which, in the s. and w. of N., constitute one continuous tract of rocky highlands, with steep declivities dipping into the sea, and only here and there broken by narrow strips of arable land. S. of Trondhjem (63° n. lat.), the ridge expands over nearly the entire breadth of Norway. The n. portions of the range, known as the Kjöllén Fjelle,* occupy a space about 25 m. in width, and form, as far n. as 69°, the boundary-line between Sweden and Norway. South of 63° n. lat., the range of the Scandinavian mountains is known as the Norska, or Dovre Fjelle, though the latter name belongs properly only to the part immediately in contact with the Kjöllén. The general elevation of the Norska Fjelle does not rise above the line of perpetual snow, whose average height in these latitudes is 5,000 ft.; but it ranges

* *Fjelle* is the plural of *fjeld*, a mountain-side.

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above that of the growth of trees, which may be stated at 4,000 ft. Only two carriage-roads traverse the Norska Fjelle, the one connecting Christiania with Bergen, and the other with Trondhjem. The Justedal glacier, in Bergen amt, is the largest on the continent of Europe; area 588 sq. m. The whole w. coast of N. is densely fringed with islands and insulated rocky masses, which, n. of 68°, in the Lofoden (q.v.) group, assume larger dimensions, and form extensive insular districts. The more important are Hindö (357 sq. m., pop. 8,190), on the borders of Nordland and Tromsö; Langö (147 sq. m., pop. 5,812); Karmö (only 21 sq. m., pop. 11,827); Senjen (273 sq. m., pop. 3,339). To the s. of the Anden group, near the little islands Mosken and Værö, occurs that eddying whirl of counter-currents known to us as the Malström; but with this and a few similar exceptions, no serious obstacles impede navigation along the numerous channels of the coasts. The most important of the rivers are the Glommen (350 m. long, basin 6,657 sq. m.), the Drams-Elv, of less than half the length and basin, Tanæ, Pasvikel, Skions, Laagen, and Voimen. These and numerous other streams are of more importance for floating down timber to the fjords than for navigation. The fjords or inlets form a characteristic feature of Norwegian scenery, and give a coast-line of more than 800 miles.

The most considerable of the lakes of N. is the Mjösen, near Christiania; but even this lake, in some places more than 1,400 ft. deep, is scarcely 60 m. long, and has an area less than 200 sq. miles. Swamps and morasses, which occupy a large area, have of late years engaged the attention of the government, which is endeavoring to drain and utilize them for agricultural purposes, and with a view of converting them into fields of turf and peat for fuel.

Climate, Soil, etc.—The peculiar physical character of N. necessarily gives rise to great varieties of climate in different parts of the country. The influence of the sea and of the Gulf Stream, and the penetration into the interior of deep inlets, greatly modify the severity of the climate, especially on the w. coast. Thus, while the mean annual temperature is for Christiania, on the e. coast, 41°, it is 46°·8 Fahr. for Bergen, on the w. coast, which is only 30' further north. On the coast generally, rain and fogs prevail; while in the regions near the North Cape, storms are almost incessant. In the interior, the air is clear and dry, the winters are cold and the summers hot, while on the coasts the conditions are different. The longest day, which in the south is 18 hours, may be said to be nearly three months in the high latitudes of the n. districts, where the longest night lasts almost an equal time. The protracted winter of the n. regions follows almost suddenly on the disappearance of the sun, when the absence of solar light is compensated for by the frequent appearance of the aurora borealis, which shines with sufficient intensity for the prosecution of ordinary occupations.

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It is estimated that $\frac{1}{3}$ of the area of N. lies within the region of perpetual snow, while elevations exceeding 2,000 ft. above sea-level are unfitted for human habitations, though for a portion of the brief summers, the herdsmen can occupy *sætre* or huts at elevations of 3,000 ft. and upward. A large extent of the mountain districts yields no produce beyond scanty grasses, mosses, lichens, and a few hardy berry-yielding plants. Only birch and juniper grow n. of 67°, which is the boundary of the pine. The Scotch Fir, *Pinus sylvestris* (Norwegian, *Furn*), and Spruce, *P. abies* (Norwegian, *Gran*), cover extensive tracts, and with birch, constitute the principal wealth of Norway. The hardier fruits, as strawberries, gooseberries, cherries, and raspberries, are abundant and excellent. Hemp, flax, rye, oats, and barley are grown as far n. as 66°; but though agriculture has been more systematically pursued of late years, the crops are not always sufficient for home consumption, and hence it is found absolutely necessary annually to import considerable quantities of corn and potatoes. The frugal peasantry do not, however, rely wholly on importation, but prepare a species of cake or bread from the bark of the pine when corn is scarce, and in plentiful years store away some of the produce of the harvest in the national corn-magazines, which are established in every part of N. for provision for an unfavorable season. Agriculture is most successful in the amt of Jarlsberg and Laurvik, and in the s. generally; while in the n., in the upper valleys, the rearing of cattle is an important industry. The herds and flocks are driven from the distant farms to the pasture-lands in these high mountain valleys, known as *Sæterdale*, where they remain till the approach of cold weather obliges the herdsmen to return with their charges to the shelter of the farms. Although the cattle and horses are small, they are generally strong and capable of bearing much hard labor.

Products, etc.—Fish are caught in almost every stream and lake of the interior, as well as in the fjords of the coast, and in the bays and channels which encircle the numerous islands skirting the long sea-line. Salmon, herring, and cod are of the greatest importance, and together give occupation to more than 50,000 men, who pursue the herring and cod fishing in the spring, and again in the summer, and the cod in the winter also. A large quantity of the fish caught does not appear in trade reports, being consumed by the fisherfolk and their neighbors. The value of the sea-fisheries of N. was nevertheless reckoned 1893 more than \$6,376,000 per annum. The quantities of dried fish, salt-fish, herrings, lobsters, fish-oil, and, recently, fish-guano, represent an enormous natural source of wealth. Norwegian ships also fish out of Norwegian waters, numbers going to the Jan Mayen seal-fisheries. Ice has of late become a marketable commodity, and a value of about \$2,250,000 is annually exported to England. Next to the fisheries, N. derives its greatest wealth from the

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produce of its woods, though forestry is not scientifically attended to. The w. coast has been almost wholly bared of timber by reckless cutting down, and the stormy climate renders the growth of young trees on the bare hillsides difficult and unsatisfactory. But great quantities of timber are still exported. Within the last few years, the Norwegian forests have yielded a new product of industry, known as wood-paste, extensively employed in the manufacture of paper.

The fauna of N. includes the bear, wolf, lynx, elk, otter, reindeer, red-deer, seal, the eider-duck and many other kinds of sea-fowl, blackcock, capercailzie, and a great variety of small-game. According to the census 1875, there were in N. 151,903 horses, 1,016,617 horned cattle, 1,686,306 sheep, 322,861 goats, 101,020 swine, 96,567 reindeer.

The mineral products of N. are not of great commercial importance, but include iron, silver, copper, cobalt, chrome, nickel, and sulphur. The latter two have increased lately; the others, especially iron, have fallen off for lack of wood to work them with. The richest mines are in the s., chiefly in the dist. of the Glommen, e.g., the famous and ancient silver-works of Kongsberg, the copper mines of Rörås, Alten, and Vigsnæs, the nickel mines of Modum and Bumble, and the cobalt-works of Buskerud, and the numerous iron shafts on the s. declivities of the mountains between Kongsberg and the Glommen. Latterly, however, some productive copper-works have been opened in the n. districts of Kaafjord in Finmark.

Ship-building in all its branches is almost the only industrial art extensively and actively prosecuted. In many parts of the country there are absolutely no special trades, the inhabitants of the small fishing-ports, no less than the inmates of the widely separated farms, employing their compulsory leisure during the long winter in weaving, spinning, and making the articles of clothing and the domestic implements required in their households.

Trade, etc.—The principal seats of trade are Christiania, Drammen, Arendal, Bergen, Stavanger, and Trondhjem. The merchant fleet numbered (1895) 3,528 sailing vessels of 1,255,220 tons, and 454 steamers of 241,419 tons. In 1893 more than 6,000 vessels cleared the ports of N. The exports, mainly timber, fish, fish-oil, bar iron, copper ore, ice, furs, feathers, and down (three-fourths of the whole value being for wood and timber, sawn or split), averaged in value during the decade 1870–80 about \$30,000,000 a year, while the imports ranged from \$40,000,000 to \$45,000,000. Exports (1894) were valued at 131,995,100 kroner (\$35,638,676); imports at 205,980,800 kroner (\$55,614,816); of which value shipped to American ports 1,238,300 kroner (\$334,326); from American ports 9,228,600 kroner (\$2,491,722). The most important commercial relations of N. are with Great Britain, Germany, Russia, and Den-

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mark; while the Rom. Cath. countries of the Mediterranean are the principal purchasers of smoked and dried fish.

Revenue, etc.—By the budget for 1896, the revenue was estimated at 61,000,000 kroner (\$16,470,000), the expenditure being presumed to equal the receipts; of the revenue, 23,000,000 kroner were raised from customs dues. The receipts (1890) were 50,332,000 kroner (each worth 26·8 cents); expenditures 45,537,000 kroner. National debt of N. (1881) \$28,254,429; (1888) \$28,075,546; (1894) \$44,364,822.

Administration, etc.—N. is divided into 20 amts or administrative circles (see table previous). These circles are subdivided into 56 fogderier (bailiwicks), each presided over by a rural magistrate, and containing in all 446 herreder, or administrative districts, which have similarly their own judicial or official heads. N. has a representative govt., based on the constitution established 1814. There was a sharp and continued constitutional struggle 1880–84 as to the king's power of veto (see below). The Storthing, or legislative chamber, meets annually, and is composed of representatives elected by deputies who have been selected for the purpose of nominating the members. These deputies are elected by a system of almost unrestricted universal suffrage, the only qualifications necessary for every Norwegian citizen not a criminal, nor in foreign service, being attainment of the age of 25 years, five years' residence, and certain property qualifications—such as a public appointment, ownership or tenancy of land, or, in towns, ownership of property worth at least 600 kroner (about \$160.80). The election of the deputies takes place every third year, when the electors meet in their respective parish churches, and choose deputies, whose number is in the proportion of 1 to 50 voters for towns, and 1 for 100 in rural districts. These deputies then select from their own body, or from among other eligible persons, the representatives for the Storthing, which is further subdivided into two distinct chambers, the Lagthing and Odelsting, with the former of whom rests the framing of legislative and financial measures, and with the latter the power of accepting or rejecting them, and the right of taking cognizance of the conduct of the ministers, judges, and other officers of the state. The members of the Storthing receive an allowance for their time and travelling expenses during the session. The Storthing votes the taxes, which are collected by officers of the king of Sweden and N.; it proposes laws, which must be ratified by the king; but if they pass the Storthing three times, they acquire validity even without the king's sanction. Although N. constitutes one joint kingdom with Sweden in regard to succession, external policy, and diplomacy, it is in all other respects an independent state, having its own government, legislative machinery, finances, army, and navy. The king is indeed commander-in-chief of all the forces of the country, whether military or naval; but he can neither augment or decrease their number, nor proclaim

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peace or war, without the assent of the Norwegian council of state, which must consist of ten members, natives of the country; nor, excepting in time of war, can he bring foreign soldiers with in the frontiers, or send native troops out of Norway. In accordance with the constitution, no title can be conferred independently of the tenure of office, and no one can be raised to the rank of a noble; while with the death of the members of the few still surviving noble families who were born before 1821, all personal honours, privileges, and distinctions belonging to nobility will cease. The constitution may therefore be regarded as purely democratic in its character. The council of state constitutes the highest court of justice, under whose jurisdiction the provincial magistrates or *amtmaend* administer justice, in conjunction with the bailiffs and *sorenskriver* or advocates, who preside over petty rural courts. These lower courts are controlled by the *Stift* or diocesan courts of justice; while the latter are, in their turn, under the high court of appeal or *Höiesté Ret*, at Christiania.

Religion, etc.—The Lutheran is the predominant church, to which all persons holding public offices of trust must belong, though freedom is allowed to all other, except Jesuits, and to Jews. It was only in 1851 that toleration was extended to the Jews, who had been forbidden to live in N. by the fundamental law. There are of course many pagans in the extreme n. among the Lapps. There are six bishops, at Christiania, Christiansand, Trondhjem, Bergen, Hamar, and Tromsö. In 1891 there were 30,685 dissenters, of whom 8 187 were Methodists, 4,228 Baptists, 1,004 Roman Catholics, 348 Mormons, and 231 Friends: the number has since increased considerably. The clergy, who receive tithes, exercise considerable influence in remote country districts, where they frequently are called to settle disputes, and exercise various judicial functions. Much has been done of late years in N. for the diffusion of knowledge, and provision is now made to extend education to the inhabitants of the most inaccessible districts by means of itinerant teachers, a certain number of whom, corresponding to the number of farms in each parish, are nominated to the office of schoolmaster. These men proceed from house to house, being supplied with a school-room, and fed and entertained by each householder in succession for the number of days at which the farm is muled; and by the aid of these means, education is so universally diffused that it is rare to meet with Norwegians who cannot read and write. Education is compulsory on children from the age of 6½ in town and 7 in the country till the age of 14. The University of Christiania (q. v.), founded 1811, has about 50 professors, and is attended (1894) by 1,190 students, among whom are the sons of many of the peasant landowners, who receive a univ. education without intending to follow the learned professions.

Emigration.—For many years there has been extensive emigration from N., mainly to the United States: the

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number of emigrants fluctuated from 3,206 in 1877 to 28,804 in 1882 and 5,642 in 1894.

Army and Navy.—By the laws of 1866, 1876, and 1885, the army of N. is composed of troops of the line, the military train, the militia or Landevaern, the civic guards, and the Landstorm: the force was reorganized (1887). The troops of the line are limited by the law to 18,000 men and 800 officers. In 1894 the troops of the line, with reserves, numbered 30,000 men and 900 officers. All young men above 22 years of age are liable to serve, except the inhabitants of the three northern amts of the kingdom. The fleet numbered (1894) 33 vessels, of which 4 were monitors, 17 third class cruisers, 11 torpedo-boats, besides small gunboats. The navy was manned by 400 sailors, but the number of men liable by law to be called upon for naval service in the maritime districts of N. exceeds 25,000. The chief fortress of N. is Oscarsborg; the fortresses Fredriksstad, Fredricksten, Carljohansvaern, Akershus in Christiania, Christiansand, Bergen, Trondhjem, and Vardöhus are of little importance.

The pop. of N. is largely rural, though (1891) 23·7 per cent. lived in towns. Christiania (or Kristiania), chief city and capital, had pop. (1891) 151,239; Bergen 53,684; Trondhjem 29,162. The physical character and consequent climatic relations of N. leave a very small proportion (according to some writers, only about 2 per cent.) of the area capable of being cultivated. There are few villages, and the isolated farmsteads are often separated from one another by many miles. The cultivators of the land are in most instances also the proprietors, less than one-third of the whole number being tenants only. Allodial land, known as Udal or Odel, does not descend to the eldest son unconditionally, since all his relatives have a claim upon it, and if it should be sold, have the right of buying it back within the term of five years at the sale-price.

Roads, Railways, etc.—The public roads in N. are excellent; and travelling is rendered cheap and expeditious by the system established and regulated by law, in accordance with which carriages and horses are provided at fixed rates of payment for travellers passing through the rural districts of the country. This system, known as 'Skyds,' is completely under the control and direction of the authorities, by whom the number of the guest-houses and stations is regulated. The length of state railways in N. (1894) was about 970 m.: total length of telegraph-lines (1895) 6,158 m. (5,142 m. belonging to the state): number of letters that passed through the post (1881) 15,545,000; (1894) 34,243,000, of which about two-thirds were domestic, the remainder foreign.

Race, Language, etc.—With the exception of about 20,000 Lapps and Finns, living in the most remote n. regions, the inhabitants of N. are generally a pure Scandinavian race, akin to the n. Germanic nations, of Aryan descent. The genuine Norwegians are of middle height, with strong, well-knit, muscular frames, of fair skin,

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with light flaxen or yellow hair, and blue eyes. In character, they may be said to be frank, yet cautious and reserved, honest, religious, and superstitious, more from an inveterate clinging to the forms, thoughts, and creed of their ancestors, than from fanaticism. Their love of country, and irrepressible fondness for the sea, by the very anomaly which these apparently contradictory propensities exhibit, show them true descendants of the sea-roving Northmen of old. Of late years, emigration has steadily increased at a rate which threatens serious evil to so thinly populated a country as N., but which is easily explained by the small portion of land capable of cultivation. The general diffusion of education, and the perfect equality and practical independence which they have known how to secure and retain for themselves, notwithstanding their nominal incorporation with the other Scandinavian kingdoms, give to the poorest Norwegians a sense of self-respect and self-reliance which distinguishes them favorably from those of the same class in other countries. The peasants, especially in the parts remote from towns, retain their ancient provincial costumes, which usually are highly picturesque, consisting, among the women, of ample woolen skirts and brightly colored knit bodices, fastened and adorned with silver or brass clasps and buckles. Music is much cultivated by all classes of the people, and the favorite national songs and melodies are mostly of a melancholy or at least plaintive character.

Danish is the language in ordinary use both in writing and in speaking, though dialects nearer akin to the old Norse are spoken by the dalesmen and mountaineers of special districts. Since the separation of the country from Denmark, a strongly national tendency has been manifested by some of the best Norwegian writers, and attempts have been made to reorganize these dialects into one general Norwegian language; thus, to revive the ancient Norse, or Icelandic, which has been preserved in Iceland in almost perfect purity since its first introduction to the island in the 9th c. by colonists from the Scandinavian mother-lands. Among the most zealous cultivators of the ancient and modern literature and history of N. are Prof. P. A. Munch, whose able expositions of the laws and social conditions of his country have thrown new light on its history; Keyser, Unger, and Hohnboe, who have done much to elucidate the Norse tongue and literature; A. Munch, Bjerregaard, Hansen, and Welhaven the critic, successful cultivators of the national lyric; J. Moe and Asbjørnsen, collectors and annotators of native sagas; Ibsen the dramatist, and Bjørnsen, delineator of national peasant-life. In the more abstruse departments of mathematical and physical science Norwegians have gained a foremost place, as is testified by names such as N. H. Abel, renowned for discoveries in definite integrals; C. Hansteen, astronomer; and Keilhau geologist.

History.—The early history of N. is comprised in that of the other Scandinavian countries, and is, like theirs,

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for the most part fabulous. It is only toward the close of the 10th c., when Christianity was introduced under the rule of Olaf I., that the mythical obscurity in which the annals of the kingdom had been previously plunged begins to give place to the light of historical truth.

The introduction of Christianity, which was the result of the intercourse which the Norwegians had with the more civilized parts of Europe through their maritime expeditions, destroyed much of the old nationality of the people with the heathenism which they had cherished, though the sanguinary feuds which had raged among the rival chiefs of the land did not immediately lose their ferocity under the sway of a milder religion. Olaf II., or the Saint (1015-30), who zealously prosecuted the conversion of his countrymen, raised himself to supreme power in the land by the subjection of the small kings or chieftains, who in the times of heathenism had subdivided the kingdom among them. The war between Olaf and King Knud the Great of Denmark, which terminated 1020 with the battle of Sticklestad, in which Olaf was slain brought N. under the sway of the Danish conqueror; but at his death 1036, Olaf's son, Magnus I., recovered possession of the throne, and thenceforth, till 1319, N. continued to be governed by native kings. The death in that year of Hakon V., without male heirs, threw the election of a new king into the hands of the national assembly, which, after many discussions, made choice of Magnus VIII. of Sweden, son of Hakon's daughter. He was in turn succeeded by his son Hakon, and his grandson Olaf IV., who, having been elected king of Denmark 1376, became ruler of the sister Scandinavian kingdoms on the death of his father 1380. This young king, who exercised only a nominal sway under the guidance of his mother Queen Margaret, only child of Valdemar III. of Denmark, died without heirs 1387. Margaret's love of power and capacity for government brought about her election to the triple throne of the Scandinavian lands, and from this period, till 1814, N. continued united with Denmark; but while it shared in the general fortunes of the latter state, it retained its own constitutional mode of government, and exercised its right of electing to the throne, until, like the sister-kingdom, it agreed of its own free will to relinquish this privilege in favor of hereditary succession to the throne. See DENMARK (*History*). The Napoleonic crisis may be said to have severed this union, which had existed more than 400 years; for Denmark, after having given unequivocal proofs of adhesion to the cause of Bonaparte, was compelled, after the disastrous war of 1813, to purchase peace at the cost of this long-united partner of her state. Crippled in her resources, and almost a bankrupt, she saw herself constrained to sign the treaty of Kiel 1814, by which it was stipulated by the allied powers that she should resign N. to Sweden, receiving in return, by way of indemnity, some portion of Swedish Pomerania and the island of Rügen, which were subsequently exchanged

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with Prussia for Laueburg, on the payment by that state of two million six-dollars. The Norwegians, having refused to admit the validity of the treaty of Kiel, nominated Prince Christian, heir-presumptive to the throne of Denmark, regent and subsequently king of Norway. This nomination was made by the national diet, or Storting, which met at Eidsvold, where they drew up a constitution based on the French constitution of 1791. These measures found, however, neither supporters nor sympathizers among the other nations; and with the sanction of the great allied powers, Charles John Bernadotte, Crown-Prince of Sweden, led an army into N., and, after taking Frederickstad and Fredrickshald, threatened Christiania. Denmark being unable to support the cause of Prince Christian, and N. being utterly destitute of the means necessary for prosecuting a war, resistance was of no avail, and the Norwegians, in this untoward conjuncture of affairs, were glad to accept the proposals made to them by the Swedish king for a union with Sweden, on the understanding that they should retain the newly promulgated constitution, and enjoy full liberty within their own boundaries. These conditions were agreed to, and strictly maintained; a few unimportant alterations in the constitution, necessitated by the altered conditions of the new union, being the only changes introduced in the machinery of government. Charles XIII. was declared joint king of Sweden and N. 1818; and while the latter has become an almost independent state, it is questionable whether the former has found in its nominal acquisition an equivalent for the loss of Finland, which was the price exacted for it by the allied powers, and made over to Russia. Since the union, N. has firmly resisted every attempt on the part of the Swedish monarchs to infringe on the constitutional prerogatives of the nation; and during the reign of the first of the Bernadotte dynasty, the relations between him and his Norwegian subjects were marked by jealousy and distrust on both sides; but, since his death, the people generally have been more contented, and N. has advanced in political security and material prosperity. A long controversy as to the royal veto between the king and the popular party was brought to a crisis 1884, when the unpopular ministers were solemnly impeached, tried, and dismissed.—See Thorlak, *Historia rerum Norregicarum* (1711); Munch, *Det Norske Folk's Historie*, 8 vols. (1852-63).

NORWAY HADDOCK: see BERGYLT.

NORWEGIAN, n. *nör-wē'jī-än*: a native of Norway:
 Adj. pertaining to Norway.

NORWEGIUM, n. *nör-wē'jī-üm* [NL. *Norwegia*, Norway], (symbol Ng): new metal not yet fully described and accepted as a chemical element.

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NORWICH, *nawr'wich*: city and railroad centre, one of the two caps. of New London co., Conn., at the head of the Thames river (formed by junction of the Shetucket and Yantic), 15 m. from Long Island Sound; lat. $41^{\circ} 32' \text{ n.}$, long. $72^{\circ} 4' \text{ w.}$; 13 m. from New London, the other cap. of the co., 35 m. s.e. of Hartford, 43 m. e. by n. from New Haven, 75 m. s.e. from Boston; on the New London Northern and the New York and New England railroads; also has the Norwich and Worcester railroad, connecting, for travel from Boston, with a daily (evening) line of steamers to New York. The channel of the Thames gives 2,000 ft. of dockage with 12 ft. depth of water, 2,000 ft. with 8 ft. depth, and 4,000 ft. with 6 or 7 ft. depth. The rise and fall of the tide is 3 ft. The site of N. is that of the valleys of the rivers forming the Thames, for its business portion; and for very fine residence quarters the plateau or series of terraces rising between the valleys, and giving a charming prospect down the valley of the Thames. The town, beyond the city limits, lies in a pleasant valley surrounded by hills. The rivers furnish very abundant water-power, the falls of the Yantic in particular giving a natural dam 50 ft. high, about which a manufacturing centre has grown. The original town was a tract of 9 sq. m. bought from the Mohegan Indians 1350, June 6, by a party from Saybrook, under Capt. John Mason and the Rev. James Fitch. The settlement was made 1360, and the town named after the English (Norfolk co.) home of Capt. Mason. The commerce of N. was of importance from 1730, was enriched by privateering 1731-2, showed a tonnage of 4,312 tons 1795, and steadily grew until the war between France and England 1803; then the embargo, and finally the war of 1812-15, ruined it. Before 1300, manufactures had sprung up—iron cutlery, oil, iron wire, paper, stockings, and clocks; and from 1812 dated cotton-mills, woolen-mills, nail factory, and cork-cutting. At present its cotton, woolen, and paper mills are unsurpassed in the United States; and machinery, fire-arms, printing-presses, wood type, bar iron, envelope-making machines, and wood-working machinery are manufactures for which it is notable.

N. was one of five towns of Conn. to which city charters were granted by the legislature of 1784. The present charter dates from 1371. The chief public buildings are the court-house, used by the city, town, and county, the Free Academy, built and endowed (1856) at a cost of \$110,000, and one of the best college preparatory schools in New England, and the Park (Congl.) and Christ (Prot. Episc.) churches. There are excellent graded schools, high school, public library and free reading-room, an old ladies' home, and about 20 churches. N. has 5 national banks, with capital aggregating \$1,700,000; total resources and liabilities \$6,847,362; and three savings banks, with over \$11,000,000 deposits.

N. has more than 40 m. of streets, many beautifully shaded with trees, water-works owned by the city, gas and electric lights furnished by private corporations,

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three parks, nine cemeteries and burying-grounds, and a horse railroad more than 6 m. in length, with negotiations in progress (1890, Aug.) for electric in place of horse power. Pop. (1800) 3,476; (1850) 6,139; (1880) 15,112; (1890) 16,156; (1900) 17,251.

NORWICH: county seat of Chenango co., N. Y.; in a fertile valley on the Chenango river and Chenango canal; 216 m. n.w. of New York, 90 m. w. of Albany. It is on the Delaware Lackawanna and Western railroad, and is the s.e. terminus of the New York and Oswego Midland railroad. N. is an attractive town, and has 8 churches, handsome stone court-house, academy, graded school, 2 national banks, and 2 newspaper offices. Hammers, leather, machinery, carriages, and pianos are manufactured. Pop. (1890) 5,212; (1900) 5,766.

NORWICH, *nawr'ich* or *nawr'rij*: city of England, cap. of the county of Norfolk, and a county in itself; on the Wensum, immediately above its confluence with the Yare; 20 m. w. of Yarmouth and 114 m. n.n.e. of London. It covers an area about 5 m. in circumference, is skirted on its n. and e. sides by the river, and on the w. and s. it was formerly surrounded by walls, the last vestiges of which have been recently removed to make room for the extension of the city. In the market-place (600 ft. long by 340 ft. wide) and its vicinity are many large shops and good houses. The castle, finely situated on an elevation near the centre of the town, originally covered, with its works, about 23 acres; its bridge (150 ft. long) over the ditch has one of the largest and most perfect Anglo-Norman arches remaining. The massive quadrangular Norman keep is now used as a prison. The cathedral, almost wholly Norman in plan, founded 1094 by Bp. Herbert Losinga, is 411 ft. long, 191 ft. broad at the transepts, and is surmounted by a spire 315 ft. high. Near the cathedral are a number of ancient and interesting structures now more or less in ruins, among which are St. Ethelbert's and the Erpingham Gate, the former in Decorated English, the latter in late Perpendicular, both valuable and rich specimens of their styles. Besides many dissenting chapels and other places of worship, there are about 40 churches, notable among which are St. Peter's, Mancroft, a handsome cruciform edifice of the 15th c., with a remarkably fine peal of 12 bells; St. Andrew's, St. Clement's, St. George's, St. Giles', St. Michael's. The Free Grammar School (endowment about £200 a year) was founded by Edward VI.; and the other educational establishments are numerous and various. The public library contains 50,000 vo s., and the library of the Norwich Literary Institution 26,000 vols. N. is the seat of extensive and flourishing manufactures, the chief of which are mustard, starch, bandannas, bombazines, shawls, damasks, camlets, and muslins; shoemaking is extensively carried on; yarn and silk mills are in operation, and employ many hands. Iron-founding, tanning, dyeing, malting, etc., and agricultural-

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implement making are among the industries. The trade is chiefly in agricultural produce and coal. N. is the see of a bishop. Pop. (1891) 100,964; (1901) 111,728.

About three miles s. of N. is *Caster St. Edmunds*, which, prior to the Roman era, was called *Caister*, and under the Romans received the name *Venta Icenorum*. N. occupies a place in history from the time of the earlier Danish invasions. It had its origin in the castle erected as a stronghold by the East Anglian kings, and resorted to as a place of safety by the inhabitants of *Venta Icenorum*, who gave it the name of North-wic, or northern station or town, on account of its relative position with respect to their own town. The bishopric of the East Angles was removed hither 1094. About 4,000 Flemings settled at N. in the reign of Elizabeth, and greatly increased the prosperity of the town by the branches of manufacture which they introduced.

NORWICH (or MAMMALIFEROUS) CRAG: series of highly fossiliferous beds of sand, loam, and gravel, of Pleistocene age, occurring at several places within a few miles of Norwich, England, where they are popularly named 'Crag.' They contain a mixture of marine and fresh-water mollusca, with idlyolites and bones of mammalia. They are evidently estuary beds, the most common shells being the very species now abundant in such situations around the coasts of Britain; but with them are associated a few extinct species. The beds rest on the white chalk, the surface of which is frequently perforated by *Pholas crispata*, the shell still remaining at the bottom of the cavity. The mammalian bones belong to species of elephant, horse, pig, deer, and field-mouse. With them are occasionally found bones of *Mastodon angustidens* and some mollusca, which belong to the Red Crag. Their occurrence here is believed to have arisen from their having been washed out of the Red, into this, the Norwich Crag.

NORWOOD, *nawr'wûd*, UPPER and LOWER: two villages in Surrey, England, with a station on the London and Croydon railway, 6 m. s. of London. The public pleasure-ground, the Beulah Spa, is prettily laid out around a mineral spring. The villages are worthy of mention, however, chiefly for their schools, among which are a district school for the pauper children of Lambeth parish and a very large and important educational establishment for the pauper children of London.

NOSE, n. *nōz* [AS. *nase*; Ger. *nase*; L. *nāsus*; Lith. *nosis*; Russ. *nos'*, a nose]: the prominent part of the face in which is the sense of smell; a snout; a nozzle; scent (see below): V. in OE., to scent; to smell; to look big; to bluster. NOSED, pp. *nōzd*: ADJ. having a nose. NOSELESS, a. *nōz'lēs*, destitute of a nose. NOSE-BAG, a bag containing food to be attached to a horse's head. NOSE-BAND, part of a bridle. NOSE-RING (see RING). NOSING, n. *nōz'ing*, in arch., the projecting edge of a molding or dip, principally on the edge of a step in a stair. TO LEAD BY THE NOSE, to lead blindly or unresistingly, applied *figuratively* to the will and actions of another. TO HAVE ONE'S NOSE ON THE GRINDSTONE, to be oppressed, as by exactions. TO THRUST ONE'S NOSE INTO, to interfere with in a meddlesome manner. LENGTH OF ONE'S NOSE, as far as one can see at the first view. TO TURN UP THE NOSE, to show contempt; to exhibit silly pride. UNDER ONE'S NOSE, under the immediate range of observation.

NOSEAN, n. *nōz'ān* [after the discoverer, K. W. *Nose*]: a mineral, a silicate of alumina and soda, allied to *hauyne*, occurring in many rocks.

NOSEGAY, n. *nōz'gā* [*nose*, and *gay*]: a bunch of gay, pleasant-smelling flowers; a bouquet.

NOSE; AND THE SENSE OF SMELL: one of the features of the face; and the special bodily sense of which it is the organ. The nose is not only the organ of smell, but is likewise a part of the apparatus of respiration and voice. Considered anatomically, it may be divided into an external part—the projecting portion, to which the term *nose* is popularly restricted; and an internal part, consisting of two chief cavities, or *nasal fossæ*, separated from one another by a vertical septum, and subdivided by spongy or turbinated bones projecting from the outer wall into three passages or *meatuses*, with which various cells or *sinuses* in the ethmoid, sphenoid, frontal, and superior maxillary bones communicate by narrow apertures.

The external portion of this organ may be described as a triangular pyramid which projects from the centre of the face, immediately above the upper lip. Its summit or root is connected with the forehead by a narrow bridge, formed on either side by the nasal bone and the nasal process of the superior maxillary bone. Its lower part presents two horizontal elliptical openings, the *nostrils*, which overhang the mouth, and are separated from one another by a vertical septum. The margins of the nostrils are usually provided with a number of stiff hairs (*vibrissæ*), which project across the openings, and serve to arrest the passage of foreign substances, such as dust, small insects, etc., which might otherwise be drawn up with the current of air intended for respiration. The skeleton or framework of the N. is composed partly of the bones forming the top and sides of the bridge and partly of cartilages, there being on either side an upper lateral and a lower lateral cartilage, to the latter of which

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are attached three or four small cartilaginous plates, termed sesamoid cartilages; there is also the cartilage of the septum, which separates the nostrils, and, in association posteriorly with the perpendicular plate of the ethmoid, and with the vomer, forms a complete partition between the right and left nasal fossæ. It is the lower lateral, termed by some writers the alar, cartilage, which by its flexibility and curved shape forms the dilatable chamber just within the nostril. The nasal cartilages are capable of being slightly moved, and the nostrils of being dilated or contracted by various small muscles. The integument of the N. is studded with the openings of sebaceous follicles, which are extremely large and abundant in this region. The oleaginous secretion of these follicles often becomes of a dark color near the surface; hence the spotted appearance which the tip and lower parts of



Fig. 1.—A Longitudinal Section of the Nasal Fossæ of the Left Side, the Central Septum being removed :

1, the frontal bone; 2, the nasal bone; 3, part of the ethmoid bone; 4, the sphenoidal sinus. *a*, the superior turbinated bone; *b*, the superior meatus; *c*, the middle turbinated bone; *dd*, the middle meatus; *e*, the inferior turbinated bone; *ff*, the inferior meatus; *gg*, a probe passed into the nasal duct.

the sides, or *alæ*, of the nose frequently present. On firmly compressing or pinching the skin of these parts, the inspissated secretion is forced out of the follicles in the semblance of minute white worms with black heads.

The *nasal fossæ*, which constitute the internal part of the N. are lofty and of considerable depth. They open in front by the nostrils; behind they terminate by a vertical slit on either side in the upper part of the pharynx, above the soft palate, and near the orifices of the Eustachian tubes which proceed to the tympanic cavity of the ear.

The mucous membrane lining the N. and its cavities is called *pituitary* (Lat. *pituita*, slime, rheum), from the nature of its secretion, or *Schneiderian*, from Schneider, the first anatomist who showed that the secretion proceeded from the mucous membrane, and not, as was pre

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viously imagined, from the brain; it is continuous with the skin of the face at the nostrils, with the mucous covering of the eye through the lachrymal duct (see EYE), and with that of the pharynx and middle ear posteriorly. This membrane varies in its structure in different parts of the organ. On the septum and spongy bones bounding the direct passage from the nostrils to the throat, the lining membrane is comparatively thick, partly in consequence of a multitude of glands being arranged beneath it and opening upon it, but chiefly, perhaps, from the presence of ample and capacious submucous plexuses of both arteries and veins, of which the latter are by far the more large and tortuous. These plexuses, lying in a region exposed more than any other to external cooling influences, appear designed to promote the warmth of the part, and to elevate the temperature of the air on its passage to the lungs. Their presence explains the tendency to hemorrhage from the N. in general or local plethora. In the vicinity of the nostrils, the mucous membrane exhibits papillæ and a scaly epithelium, like the corresponding parts of the skin. In the sinuses, and in all the lower region of the N., the epithelium is of extreme delicacy, being of the columnar variety, and clothed with cilia. In the upper third of the N.—which, as the proper seat of the sense of smell, may be termed the *olfactory region*—the epithelium ceases to be ciliated, assumes a more or less rich sienna-brown tint, and increases remarkably in thickness, so that it forms an opaque soft pulp upon the surface. It is composed of an aggregation of nucleated particles, of nearly uniform appearance throughout, except that the lowest are of a darker color than the rest, from their containing a brown pigment in their interior. Dr. Todd and Mr. Bowman remark, in their *Physiological Anatomy*, from which is condensed the above account of the nasal mucous membrane, that the olfactory region abounds in glands, apparently identical with sweat glands, which dip down in the recesses of the submucous tissue among the ramifications of the olfactory nerve.

The nerves of the N. are the first pair or olfactory, which are specially connected with the sense of smell, branches of the fifth pair, which confer ordinary sensibility on its skin and mucous membrane, and motor filaments, from the facial nerve to the nasal muscles. The olfactory nerve on each side is connected with the inferior surface of the Brain (q.v.) by an external, a middle, and an internal root, which unite and form a flat band (more correctly, a prism), which, on reaching the cribriform plate of the ethmoid bone, expands into an oblong mass of grayish-white substance, the *olfactory bulb*. From the lower surface of this bulb are given off the *olfactory filaments*, 15 or 20, which pass through the cribriform foramina, and are distributed to the mucous membrane of the olfactory region. These filaments differ essentially from the ordinary cerebral nerves. They contain no white substance of Schwann, are not divisible

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into elementary fibrulæ, and resemble the gelatinous fibres in being nucleated and of finely granular texture. The branches of the fifth pair (or trifacial) given to the N. are the nasal nerve (derived from the ophthalmic division), which supplies the skin and mucous membrane in the vicinity of the nostrils, and the naso-palatine nerve (de-

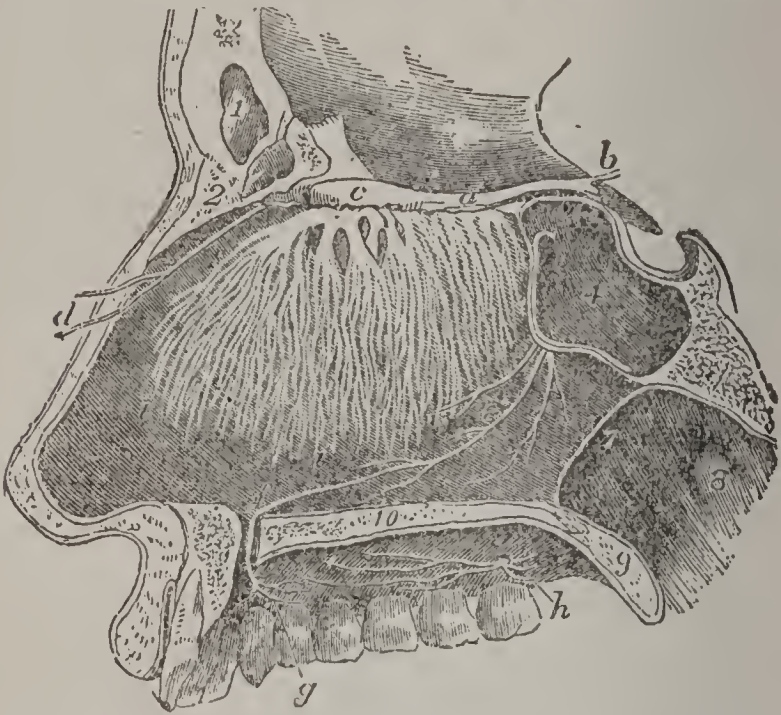


Fig. 2.—The Distribution of the Olfactory Nerve on the Septum of the Nose:

1, the frontal sinus; 2, the nasal bone; 4, the sphenoidal sinus of left side; 7, the posterior opening of the left nostril; 8, the opening of the Eustachian tube; 9, a section of the soft palate; 10, a section of the hard palate. *a*, the olfactory nerve; *b*, its bulb, from which filaments proceed downward through the cribriform plate of the ethmoid; *d*, the nasal branch from the ophthalmic division of the fifth nerve; *e*, the naso-palatine nerve from the sphenopalatine ganglion; *g*, *h*, its branches; *i*, the septum of the nose.

rived from Meckel's ganglion, connected with the superior maxillary division), which nerve supplies the mucous membrane on the spongy bones and on the septum. The peculiar sensation that precedes sneezing is an affection of the nasal nerve; and the flow of tears that accompanies a severe fit of sneezing is explained by the common source of this and the lachrymal nerve; while the common sensibility of the N., generally, is due to the branches of this and of the naso-palatine nerve.

The nature of odorous emanations is so little known, that it is impossible to give a definite account of the mode in which they produce sensory impressions. From the fact that odorous substances are usually volatile, and *vice versâ*, it may be presumed that they consist of particles of extreme minuteness dissolved in the air; yet the most delicate experiments have failed to discover any loss of weight in musk and other strongly odorous substances after they have been freely evolving their effluvia for several years. But whatever may be the nature of the odorous matter, it is necessary that it should be transmitted by a respiratory current through the nostrils to

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the true olfactory region, whose membrane must be in healthy condition. If the membrane is too dry, or if there is an inordinate excretion of fluid from its surface (both of which conditions may occur in catarrh or cold in the head), smell is impaired or lost, in consequence of the necessary penetration of the stimulating odor to the nervous filaments being prevented.

The acuteness of the sense of smell is far greater in many of the lower animals (e.g., dogs) than in man, and they employ it in guiding them to their food, in warning them of approaching danger, and for other purposes. To civilized man its utility is less, but it is occasionally much increased when other senses are deficient. In the well-known case of James Mitchell, deaf and blind from his birth, it was the principal means of distinguishing persons, and enabled him at once to perceive the approach of a stranger. Among many savage tribes, the sense of smell is almost as acute as in many of the lower mammals—e.g., the Peruvian Indians are able, according to Humboldt, to distinguish, in the middle of the night, whether an approaching stranger is a European, American Indian, or negro.

Although all poisonous gases are not odorous, and all bad odors may not be positively deleterious, doubtless one of the principal uses of the sense of smell is to detect atmospheric impurities, many of which are most noxious, giving rise to very dangerous forms of fever.

NOSOGRAPHY, n. *nō-sōg'ra-fī* [Gr. *nosos*, disease; *graphō*, I write]: the scientific description of diseases.

NOSOLOGY, n. *nō-sōl'ō-jī* [Gr. *nosos*, disease; *logos*, discourse]: systematic arrangement and classification of diseases of plants and animals; the doctrine of diseases; a branch of the science of medicine. **NOSOLOGICAL**, a. *nōs'ō-lōj'ī-kīl*, pertaining to. **NOSOLOGIST**, n. *-jīst*, one who classifies diseases.—*Nosology* has been presented at various times under different systems—some based on the nature of the ascertained causes of diseases; others on the pathological states or conditions which attend diseases; others on the differences between structural and functional diseases, etc. It is difficult to decide on the best method; but that of Dr. Farr, one of the most distinguished living medical statisticians, adopted by the English registrar-general in reports on the mortality of London and England, is becoming more generally adopted than any other. It has the advantage over the formerly popular, now antiquated, system of Cullen (1792), of meeting the requirements of modern science, and (by illustrating great questions connected with public health) of showing and aiding to remove those causes that are injurious or fatal to life, e.g., bad drainage, imperfect ventilation, etc.

Dr. Farr's system of N. is arranged in four primary classes, each including various orders:

CLASS I. ZYMOTIC DISEASES [Gr. *zymē*, ferment].—Diseases epidemic, endemic, or contagious, and induced

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by some specific body, or by want of food, or by its bad quality. In this class are four orders—viz., Order I. *Miasmatic Diseases* [Gr. *miasma*, stain], e.g., small-pox, measles, scarlet-fever, diphtheria, typhus and typhoid fevers, cholera, ague, etc. Order II. *Enthetic Diseases* [Gr. *enthetos*, put in or implanted], e.g., syphilis, gonorrhea, glanders, lympholitis, malignant pustule, etc. Order III. *Dietic Diseases* [Gr. *diaita*, way of life or diet], e.g., famine, fever, scurvy, purpura, rickets, bronchocle, delirium tremens, etc. Order IV. *Parasitic Diseases*, e.g., scabies (or itch), and worm disorders from animal parasites, and ring-worm, scald-head, etc., from vegetable parasites or fungi.

CLASS II. CONSTITUTIONAL DISEASES.—Diseases affecting several organs, in which new morbid products are often deposited; sometimes hereditary. This class contains two orders—Order I. *Diathetic Diseases* [Gr. *diathesis*, condition or constitution], including gout, anæmia, cancer, melanosis, lupus, etc. Order II. *Tubercular Diseases*, e.g., scrofula, phthisis, mesenteric disease, tubercular meningitis, etc.

CLASS III. LOCAL DISEASES.—Diseases in which the functions of particular organs or systems are disturbed or obliterated, with or without inflammation; sometimes hereditary. This class includes eight orders—Order I. *Brain Diseases* (more correctly, *Diseases of the Nervous System*), e.g., apoplexy, paralysis, epilepsy, chorea, hysteria, mania, etc. Order II. *Heart Diseases* (more correctly, *Diseases of the Circulatory System*), e.g., pericarditis, endocarditis, aneurism, angina pectoris, atheroma, phlebitis, varicose veins, etc. Order III. *Lung Diseases* (more correctly, *Diseases of the Respiratory System*), e.g., bronchitis, pneumonia, pleurisy, asthma, empyema, laryngitis, etc. Order IV. *Bowel Diseases* (more correctly, *Diseases of the Digestive System*), e.g., stomatitis, gastritis, enteritis, peritonitis, jaundice, etc. Order V. *Kidney Diseases*, e.g., Bright's disease, nephritis, ischuria, diabetes, stone, gravel, etc. Order VI. *Genetic Diseases* (or *Diseases of the Generative System*), e.g., hydrocele, ovarian dropsy, etc. Order VII. *Bone and Muscle Diseases*, e.g., caries, necrosis, exostosis, synovitis, muscular atrophy, etc. Order VIII. *Skin Diseases*, e.g., urticaria, eczema, herpes, impetigo, acne, lichen, prurigo, etc.

CLASS IV. DEVELOPMENTAL DISEASES.—Special diseases, incidental result of the formative, reproductive, and nutritive processes. It contains four orders. Order I. *Developmental Diseases of Children*, e.g., malformations, idiocy, teething, etc. Order II. *Developmental Diseases of Women*, e.g., amenorrhœa, child-birth, change of life, etc. Order III. *Developmental Diseases of Old People*, e.g., old age and its concomitant affections. Order IV. *Diseases of Nutrition*, e.g., atrophy, debility, etc.

NOSOPHYTA, n. nō-sōf'ī-tā [Gr. *nosos*, disease; *phuton*, a plant]: a di-ease caused by the growth or development of such parasitic plants as fungi, in an animal tissue.

NOSSAIRIANS—NOSTALGIA.

NOSSAIRIANS, or NUSAIRIEH (Ar. *Nossairiun*, Nazarean): Moslem sect, founded by Hakem, and a branch of the Shiites (q.v.), followers of Ali, a sect said to have originated, like the Druses, from the Ismailis and Karmathians. The N. sect was otherwise termed Nozaïte, Nosairis, Nusairieh. They believed that the Divinity was united with certain prophets, particularly Ali and Mohammed-ben-Hanisiah—a doctrine abhorred by other Moslems, who regard it as derived from the Christians. Hamza (Hamzah?—a prophet of the time of the caliph Hakem, 10th c.) accused the N. of belief in metempsychosis, and of teaching that all things are lawful to believers—murder, theft, fornication, falsehood; and of practicing the same. Of Hamza himself the Druses make a divinity and the true Messiah.

NOSSI-BÉ, *nos-sē-lā'*, or NOSSI-BARIN, or VARIOU BÉ: island on the n.w. coast of Madagascar, at the mouth of the Bay of Passandava, separated from the mainland by a narrow channel; nearly 750 sq. m. Its coast-line is very much indented, and its surface much diversified. The highest hill is 1,486 ft. above sea-level, clothed to the summit with magnificent trees; but much of the island has a bare aspect. The soil is very fertile, and rice, maize, manioc, bananas, etc., are produced far beyond the wants of the inhabitants. The soil is volcanic, and there are several old craters filled with water. Nossi-Bé has been in the hands of the French since 1840, and is regarded by them as an important possession, on account of an old claim which they suppose themselves to have to Madagascar. The small town Hellville, named from De Hell, French gov. of Réunion, with a harbor sheltered from n. and e. winds, is the chief town (pop. 1,200 to 1,500). There is good anchorage also at several other parts of the coast. Trade is mainly with Madagascar; imports (1878) about \$280,000 in value, exports about \$400,000. Pop. of island, mostly Sakalavas, varying at different seasons, (1889) 7,803.

NOSSI-IBRAHIM, *nos'sē-ib-râ-hēm'*, or SAINTE MARIE, *sāngt mâ-rē'*: island on the e. coast of Madagascar, separated by a strait about 5 m. in width; a French possession; length about 40 m. from n.n.e. to s.s.w., breadth only a few m. It has been in French hands since 1750, and is prized as their chief place of commerce on that coast. The soil is generally arid, and the climate moist and unhealthful. Rain is extremely frequent. A small town called Saint Louis is a seaport, and fortified. All the French possessions on the coast of Madagascar were placed by imperial decree 1851 under one govt., that of the Comoro Isles (q.v.). Pop. of the island about 5,000.

NOSTALGIA, n. *nōs-tāl'jī-ă* [Gr. *nostos*, return, especially home; *algos*, pain]: home-sickness; a vehement desire to revisit home. NOSTAL'GIC, a. *-jīk*, pertaining to.

NOSTISM—NOSTRADAMUS.

NOSTISM, n. *nös'tizm* [L. *nos*, we]: a term used to designate the undue employment of the editorial *we* of newspaper-leader writers; a convenient plu. form of *egoism*.

NOSTOC, n. *nös'tök* [uncertain]: genus of plants of nat. order *Algæ*, suborder *Confervaceæ*, found upon moist ground, rocks near streams, etc., and consisting of an olive-colored, somewhat gelatinous hollow tumid frond, filled with simple filaments resembling strings of beads. *N. commune* is found sometimes springing up suddenly on gravel-walks and pasture-grounds after rain. It is a trembling gelatinous mass, often called SPAR JELLY, and vulgarly regarded, owing to the suddenness with which it makes its appearance, as having fallen from the skies, and as possessed of important medicinal virtues. *N. edule* is used in China as food. **NOSTOCHINÆ**, n. plu. *nös'tō-kîn'ē-ē*, a suborder of *Algæ*, composed of moving filaments immersed in a gelatinous matter.

NOSTRADAMUS, *nös-tra-dāmūs* (proper name Michel de Notre-Dame, *déh nō'tr-dân')*: noted astrologer: 1503, Dec. 13—1536, July 2; b. St. Remy, in Provence; of Jewish descent. He studied first at the Collège d'Avignon, where he showed remarkable scientific powers, and subsequently attended the celebrated school of medicine at Montpellier. Here he acquired distinction during an epidemic that desolated s. France, by his humane attentions to those stricken by the pestilence. After taking his degree, he acted as professor, but was induced by his friend J. C. Sculiger to settle in Argen as medical practitioner. After travelling, he settled at Salon, a little town in the environs of Aix, about 1544. Already he must have had repute, for in the following year, when an epidemic was raging at Lyon, he was solemnly invited thither by the civic authorities, and is said to have rendered immense services. He began his prophetic vein about 1547, though in what light he himself regarded his pretensions is not known; but he commenced to write his famous predictions (*Prophéties*), pub. Lyon 1555. These predictions were in rhymed quatrains, divided into centuries, of which there were seven; the 2d ed., 1558, contained ten. Astrology was then the fashion, and these quatrains, expressed generally in obscure and enigmatical terms, had great success. Some, indeed, regarded the author as a quack, but the great majority as a genuine seer or predictor of the future. He was, consequently, much sought after by all sorts of people, high and low. Catharine de' Medicis invited him to visit her at Blois, to draw the horoscope of her sons, and on his departure loaded him with presents. The Duke and Duchess of Savoy went to Salon expressly to see him; and when Charles IX. became king, he appointed N. his physician-in-ordinary (1564). He died at Salon. N.'s predictions have been the subject of an immense illustrative and controversial literature. They were condemned by the papal court 1781, being charged

with predicting the fall of the papacy. He wrote also an Almanac, which served as the model of all subsequent ones containing predictions about the weather.—See Jaubert's *Vie de M. Nostradamus, Apologie et Histoire* (Amst. 1656); Astruc's *Mémoires pour servir à l'Histoire de la Faculté de Montpellier* (Paris 1767); *Apologie pour les Grands Hommes Soupçonnés de Magie* (Paris 1825); and E. Baresté's *Nostradamus* (Paris 1842).

NOSTRIL, n. *nös'trîl*; usually in the plu., NOSTRILS, -*trîlz* [AS. *nas-thyrla*, nostrils—from *næse*, the nose; *thyrel*, an aperture]: one of the two apertures of the nose which give passage to air and to the secretions of the nose. DISEASES OF THE NOSTRILS, affections various in origin and form. Acute inflammation of the nasal mucous membrane, or *Coryza* (cold in the head), is a frequent affection (see CATARRH); and the chronic form of inflammation is known as OZENA (q.v.). Hemorrhage from the nostrils, or *Epistaxis* [Gr. a dropping], is by far the commonest form of bleeding from a mucous membrane. It may be produced: 1. By direct injury, e.g., a blow on the nose, or a scratch in the interior of the nostrils; or 2. It may be an *active* hemorrhage, in which case it is often preceded by a feeling of tension and heat in the nostrils, pain in the forehead, giddiness, buzzing in the ears, and flushing of the face (these symptoms are, however, seldom all present in the same case, and frequently the flow of blood is preceded by no apparent disorder); or 3. It may be *passive*, due either to a morbid condition of the blood, as in malignant scarlatina, typhoid and typhus fevers, scurvy, purpura, etc., or to obstruction of the circulation by disease of the liver and heart.

If the hemorrhage occur in a flushed plethoric subject, and is obviously *active*, it may be regarded as a salutary effort of nature, whose spontaneous cessation may be awaited; but if it continue so long as materially to weaken the patient, or if it be *passive*, or if it arise from injury, then means should be taken to stop it with as little delay as possible. The patient should be placed in the sitting posture at an open window, with the head erect or slightly inclined backward; and among the simpler means first to be tried are compression of the nostrils by the fingers, the application of a key or other piece of cold metal to the back of the neck, and the occasional immersion of the face or whole head in cold water, especially if accompanied by a drawing-up of the water into the nostrils; or Dr. Negrier's plan of causing the patient, in a standing position, suddenly to raise his arms straight upward, and to retain them for a short time in this position—a remedy which he states to have always succeeded, even in very bad cases, when other means had failed. Should these means fail, recourse must be had to astringent injections (e.g., 20 grains of alum dissolved in an ounce of water) thrown up the nostrils by a syringe; or to astringent powders (e.g., finely-powdered galls, kino, matico, alum, etc.) blown up the

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nostrils by means of a quill or other tube, or snuffed up by the patient. As a final resource, direct compression must be applied. Abernethy never failed in stopping the bleeding by winding a piece of moistened lint around a probe, so as to form a cylindrical plug, passing this along the floor of the nose for its entire length, then carefully withdrawing the probe, and allowing the lint to remain for three or four days. Cases occasionally occur in which it is necessary also to plug the posterior orifices of the nostrils by surgical operation.

Polypus (old term for any sort of pedunculated tumor firmly adhering—lit. ‘by many feet’—to a mucous surface) is of common occurrence in the nostrils; its most usual seat of attachment being one of the turbinated bones. The ordinary kind is of the consistence of jelly, yellowish, streaked with blood-vessels, and of pear-shaped form. The patient has a constant feeling of fulness in the nostril, as if he had a cold in the head; he cannot effectually blow his nose; and his voice is sometimes rendered thick and indistinct. If he force his breath strongly through the affected nostril, and at the same time compress the other, and close the mouth, the polypus may generally be brought into view. The best treatment is to seize the neck or pedicle with the forceps, and twist it off. The consequent hemorrhage may be readily checked by the means above described.

Foreign bodies are often inserted into the nostrils by children, and become impacted. They may usually be extracted by a small scoop or a bent probe. If they cannot be removed by these means, they must be pushed back into the throat through the posterior nares.

Children are occasionally born with imperforated nostrils. This congenital malformation may usually be remedied by surgical assistance.

NOSTRUM, n. *nōs'trūm* [L. *nostrum*, our own—from *nos*, we]: a quack medicine; a remedy the ingredients of which are kept secret.

NOT, ad. *nōt* [AS. *naht*, naught, not: Ger. *nicht*, not—from the negative particle *ni*, and Goth. *vaihts*; AS. *wiht*; Ger. *wicht*, a whit, a thing]: a word which expresses denial or refusal. *Note*.—NOT is connected with NAUGHT, which see.

NOT, or NOTE, v. *nōt* [AS. *ne*, not; *wát* or *wot*, knew]: in OE., know not; could not.

NOTABLE, a. *nō'tā-bl* [F. *notable*—from L. *notab'ilis*, distinguished, memorable—from *noto*, I designate or impress with a mark: It. *notabile*]: remarkable; worthy of notice; well known; *familiarly* applied to a woman, careful, thrifty. NO'TABLY, ad. *-blī*, in a notable manner; memorably; remarkably. NO'TABLENESS, n. *-bl-nēs*, state or quality of being notable. NO'TABIL'ITY, n. *-bl'ī-tī*, the quality of being notable; a remarkable person or thing: a person of note.

NOTABLES—NOTAL.

NOTABLES: name formerly given in France to persons of distinction and political importance. As the states-general were inconvenient to the despotism of the monarchy, the kings of the House of Valois adopted the expedient of calling in their stead *Assemblies of the Notables*, the time of calling them and the composition of them being dependent entirely on the pleasure of the crown, by which also all their proceedings were guided, so that they generally consented at once to whatever was proposed to them. They showed a particular readiness in granting subsidies, to which they themselves, as belonging to the privileged classes, were not to contribute. An assembly of N. convened in Paris by Richelieu 1636, and presided over by Gaston, brother of Louis XIII., consisted of only 35 members. For more than a century and a half, even this poor acknowledgment of any other mind or will in the nation than that of the sovereign was discontinued; but when the state of the finances brought the monarchy into difficulties and perils, Louis XVI., at the instigation of the minister Calonne, had recourse again to an assembly of N. 1787, Feb. 22—May 25. It consisted of 137 members, among whom were 7 princes of the blood, 9 dukes and peers, 8 marshals, 11 archbishops, 22 nobles, 8 councilors of state, 4 masters of requests, 37 judges, 12 deputies of the Pays d'États, the civil lieutenant, and 25 persons belonging to the magistracy of different cities of the kingdom. Calonne's representations of the state of the finances induced the N. to adopt many reforms in the matter of taxation; but no sooner was the assembly dissolved, than many of them joined the parliament in opposition to resolutions adverse to their private interests, so that the king was compelled to determine on assembling the states-general. Necker, who had meanwhile been placed at the head of affairs, assembled the N. again 1788, Nov. 6, to consult them concerning the form in which the states-general should be convened. The N. declared against every innovation, and so compelled the court to half-measures which helped to prepare the way for the Revolution.—The parliament of the new principality of Bulgaria is spoken of as the Assembly of the Notables.

NOTAL, a. *nōt'al* [Gr. *notos*, the back]: belonging or pertaining to the back. **NOTALGIA**, v. *nō-tāl'jī-a* [prefix *not-*; Gr. *algos*, pain]: pain in the back; irritation of the spine.




NOTARY PUBLIC.

NOTARY PUBLIC, or NOTARY, n. *nō'tér-ī* [F. *notaire*, a notary—from L. *notāriŭs*, a shorthand-writer—from *nota*, a mark, a sign]: officer of the law, whose chief function is to act as a witness of any solemn or formal act, and to give a certificate of the same; which certificate, if duly authenticated, is accepted all the world over as good evidence of the act done in his presence and attested by him. He attests contracts and protests bills of exchange. The services of a N. are available chiefly where his evidence is to be used in another state or in a foreign country. NOTARIAL, a. *nō-tā'ri-āl*, pertaining to or done by a notary. NOTA'RIALLY, ad. -*lī*.—*Notary Public* in the United States is an officer appointed usually by the gov. of the state: his term of office is generally two years. His chief duty is to attest contracts, writings, and deeds, and to certify to the genuineness of the execution thereof, so that these instruments may be read in evidence in his own and in foreign states and countries, without formally proving their execution: by the laws of most of the states, the notarial certificate is presumptive evidence of the genuineness of the instrument. The notary public has the power to administer oaths. and chief among his functions is the protesting of foreign bills of exchange for non-payment and non-acceptance; and his certificate to that effect is evidence thereof, in a foreign country, by the commercial law of nations: in some of the states he has the power to protest local bills, and his certificate to that effect is by statute made presumptive evidence thereof. The memoranda made by the notary in his office-books, in the course of his duties as notary, in most of the states may be read in evidence when the testimony of the notary himself cannot be had by reason of his death or insanity. There are statutes in all of the states defining the powers of a notary; and in all the states his powers have been considerably enlarged, and are no longer restricted to those given to him by what is known as the law merchant.

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NOTATION, n. *nō-tā'shŭn* [F. *notation*—from L. *notā-tiōnem*, a marking or making marks upon—from *noto*, I mark]: act or practice of recording anything by marks or figures: expression of any number or quantity by its appropriate figures: in *music*, the art of representing musical sounds by notes or signs (see **NOTE**, in *Music*: **MUSIC**). The representation of numbers is known as 'arithmetical,' and that of quantities as 'symbolical' notation.

I. ARITHMETICAL NOTATION.—The invention of arithmetical N. must have been coeval with the earliest use of writing, whether hieroglyphic or otherwise, and must have come into use about the time when it was felt that a mound, pile of stones, or huge misshapen pillar, was insufficient as a record of great events, and required to be supplemented by some means which would suffice to hand down to posterity the requisite information. The most natural method undoubtedly was to signify 'unity' by one stroke, thus: |; 'two' by two strokes, ||; 'three' by three strokes, |||, etc.; and, as far as we know, this was the method adopted by most of those nations that invented systems of N. It is shown on the earliest Latin and Greek records, and is the basis of the Roman, Chinese, and other systems. We have thus a convenient division of the different notational systems into the *natural* and *artificial* groups, the latter including the systems of those nations that adopted distinct symbols for at least each of the nine digits. The Roman and Chinese systems are the most important of the natural, and the Hebrew, later Greek, and 'decimal' systems of the artificial group.

Roman System.—The system of the Romans was probably adopted from the Greeks, and was distinguished equally by its simplicity and its cumbrousness. The following seems the probable theory of its development. A simple series of strokes was the basis of the system; but the labor of writing and reading large numbers in this way would soon suggest methods of abbreviation. The first and most natural step was the division of the strokes into parcels of tens, thus, , a plan which produced great facility in the reading of numbers. The next step was to discard these parcels of ten strokes each, retaining only the two cross-strokes, thus, X, as the symbol for ten. Continuing the same method as larger numbers came to be used, they invented a second new symbol for 100, thus C (which was at first probably the cancelling stroke for ten X's in the same way as X was originally the cancelling stroke for ten units); and for the sake of facility in writing, subsequently used the letter C, which resembled it, in its place. The fact that C was the initial letter of the word *centum*, 'a hundred,' was doubtless an additional reason for its substitution in place of the original symbol for 100. An extension of the same process produced M, the symbol for 1,000, which was written also , , and very frequently CIƆ. This symbol was probably suggested by the fact that M was the initial letter of the Latin word *mille*, signifying a thousand. The early Roman system went no higher. But though the invention of these three symbols had greatly

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facilitated the labor of writing and reading numbers, further improvements were urgently required. The plan of 'bisection of symbols' was then adopted; X was divided into two parts, and either half, V or Λ, used as the symbol for 5; □ was similarly divided, Γ or ⊥ standing for 50; and ∟, CI, or I∟, was obtained in the same manner, and made the representative of 500. The resemblance of these three new symbols to the letters V, L, and D, caused the substitution of V, L, and D as the numerical symbols for 5, 50, and 500. A final improvement was the substitution of IV for 4 (in place of IIII), IX for 9 (in place of VIIII), XC for 90 (instead of LXXX), and similarly XL for 40, CD for 400, CM for 900, etc.; the smaller number, when in front, being always understood as subtractive from the larger one after it. This last improvement is the sole departure from the purely additional mode of expressing numbers; and if the symbols 4, 9, 90, etc., be considered as single symbols, which they practically are, the deviation may be deemed one merely of form. In later times, the Roman N. was extended by a multiplication of the symbol for 1 000 thus CCI∟∟ represented 10 000; CCCI∟∟∟ represented 100,000, etc.; and the bisection of these symbols gave them I∟∟ and I∟∟∟ as representative of 5,000 and 50,000 respectively. This, in all probability, is the mode according to which the Roman system of N. was constructed. To found a system of arithmetic on this notation would have been nearly impossible; and so little inventive were the Romans, that the attempt seems never to have been made. They performed what few calculations they required by the aid of the *Abacus* (q.v.).

Chinese System.—This system presents strong resemblance to the former, but is in facility of expression, much superior. Like the Roman, it retains the primitive symbols for the first three digits and like it also expresses the last four by prefixing a new symbol to the symbols for the first four, and the analogy is continued up to 'twenty.' From this point onward, the Chinese system departs from the 'additive' principle, as 20, 30, etc., are represented not as in the Roman system by a repetition of the symbol for 10, but by affixing to the symbol for 10, on its left side, the symbols for 2, 3, etc., as multiples. The same method is adopted with the numbers 200, 300, etc.; and should the number contain units, they are annexed on the right-hand side. For small numbers up to 20, the Roman N. is more expeditious on account of the greater simplicity of its characters; but for very large numbers, the Chinese is scarcely more cumbrous than our own. Some numbers expressed by the Chinese with 14 characters, require more than 100 symbols in the Roman notation. Previous to the intercourse of the western European nations with China, their N. was much more cumbrous than it is at present; but the changes since made have affected merely the form of the characters, without altering the principle of the system.

Artificial Systems.—The first of these in point of date, is the Hebrew; but as modern knowledge of it is very mea-

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gre, and as its principle was adopted by the Greeks in the construction of their improved system it suffices to describe the latter.

Greek System.—The Greeks at first used a method similar to the Romans, though at the same time they appear to have employed the letters of the alphabet to denote the first 24 numbers. Such a cumbrous system was naturally distasteful to so fastidious a race, and they hit on the happy expedient of dividing their alphabet into three portions—using the first to symbolize the 9 digits, the second the 9 tens, and the third the 9 hundreds. But as they possessed only 24 letters, they had to use three additional symbols: their list of symbols of notation then stood as follows:

Units.		Tens.		Hundreds.	
α represents	1	ι represents	10	ζ represents	100
β	2	κ	20	σ	200
γ	3	λ	30	τ	300
δ	4	μ	40	υ	400
ϵ	5	ν	50	ϕ	500
ς (introduced)	6	ξ	60	χ	600
ζ	7	\omicron	70	ψ	700
η	8	π	80	ω	800
θ or ϑ	9	ς or ζ (introduced)	90	$\vartheta, \Lambda, \Upsilon$ (introduced)	900

By these symbols, only numbers under 1,000 could be expressed, but by putting a mark, called *iota*, under any symbol, its value was increased a thousandfold, thus $\alpha = 1,000$. $\kappa = 20,000$; or by subscribing the letter M, the value of a symbol was raised ten-thousandfold, thus, $\eta_M = 80,000$. For these two marks, single and double dots placed over the symbols were afterward substituted. This improvement enabled them to express with facility all numbers as high as 9,990 000, a range amply sufficient for all ordinary purposes. Further improvements were made on this system by Apollonius, who also by making 10,000 the root of the system, and thus dividing the symbols into tetrads, greatly simplified the expression of very large numbers. Both Apollonius and Archimedes had to a certain extent discovered and employed the principle of giving to symbols values depending on their position and multiplicative of their real value, but this principle was applied to tetrads or periods of four figures only, and the multitude of symbols seems to have stood in the way of further improvement. Had Apollonius, who was the chief improver of the system, discarded all but the first nine symbols and applied the same principle to the single symbols which he applied to the 'tetrad' groups, he would have anticipated the decimal notation.

The Greek arithmetic, founded on such a system of N., was necessarily long and complicated in its operations, each number in the multiplicand forming with each number in the multiplier a separate product (not as in our sys-

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tem, where one product blends with another by the process of 'carrying'), though by arranging these products in separate columns, according as they amounted to units, tens, hundreds, etc., the process was somewhat simplified. But when fractions formed part of the multiplier and multiplicand, the Greek arithmetic became almost unmanageable, till the invention of Sexagesimals (q. v.) by Ptolemy superseded it. After Ptolemy's death, all improvement was arrested

Decimal System.—The decimal system, introduced into Europe from the East (see NUMERALS), was employed first by the Spaniards, and was from them transmitted to the French and Germans through whom its use was extended over Europe. The modern arithmetic was not practiced in England till about the middle of the 16th c., and for a long time after its introduction it was taught only in the universities. The decimal system, possessing (beside the cipher, 0) only 9 symbols—viz., 1, 2, 3, 4, 5, 6, 7, 8, 9 (called the nine digits)—adopts the principle of giving to each symbol or 'figure' two values, one the absolute value, and the other a value depending upon its position. The numbers from 'one' to 'nine' inclusive are expressed by the nine digits; ten is expressed by writing a cipher or zero after 1 (10), thus throwing it into the second place, and giving it a positional value ten times its absolute value. From the principle that a figure thus moved one place to the left is held to be increased in value ten times, this method of N. is called *decimal* notation (Lat. *decem*, ten) and *ten* is said to be the 'radix' of the system. The numbers from 'eleven' to 'nineteen' inclusive are expressed by taking the symbol 10 and putting the digits from 'one' to 'nine' inclusive in place of the zero—e. g., twelve is written 12, 1 *in position* signifying ten units, and 2, two additional units. On the same principle, twenty is expressed by putting 2 in the second position (20), and so on to 99. To express a hundred, 1 is put in the third place (100), thus making its value ten times what it is in the second place, or ten times ten units; two hundred is similarly expressed by 200, etc., and should a number of tens and units amounting to less than a hundred exist in the number, the symbols expressing them are substituted for the two zeros. This process can be similarly continued without limit.

There is another way of looking at this N., perhaps simpler and clearer. In such a number, e. g., as 333, instead of attributing different values to the figure 3 in the different positions, we may consider it as symbolizing the same number throughout, namely, *three*; but three *what*? In the first place, it signifies three ones or units (e. g., three single pounds or dollars); in the second place, it still signifies three, but now it is three 'tens' or decades (three parcels of ten dollars each); and in the third place, it still signifies three, but now three hundreds (three parcels of a hundred each). It is from this point of view that the first place to the right is called the *place of units*, or the *unit's place*; the second, the *place of tens*, and so on. When such a number as 6473 is analyzed on this principle, it is seen to

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mean 6×10^6 (6 times 1000) $+ 4 \times 100 + 7 \times 10 + 3 \times 1$; and 6004 becomes $6 \times 1000 + 4 \times 1$. In this latter instance the peculiar importance of the figure 0 is seen (see NOTTING). Following out the method, the general formula for all numbers is $a \times 10^n + b \times 10^{n-1} + c \times 10^{n-2} + \dots + m \times 10^3 + n \times 10^2 + p \times 10 + q$, where $a, b, c, \dots, m, n, p, q$, stand for any of the nine digits or zero.










The special advantages of such a system are manifold. It enables us to express small numbers with the greatest ease, and as the smaller numbers are most frequently used, this is a great point in favor of the system. It also gives to computation a unity which could never have existed in the systems of N. previously described; and the most ordinary, and at the same time effective, illustration of this is the process of 'carrying' in multiplication, whereby one product is blended with another, and much time and trouble in the subsequent addition are saved. This simplification, however, is due chiefly to the introduction of the symbol 0, which, supplying the place of an absent digit, preserves to those figures on the left of it their true positional value. Another advantage of this system is the case with which computations involving fractions are performed (see DECIMAL FRACTIONS). The use of the number 10 as *radix*, is universal in all systems of notation; but it has been often doubted, and in some respects with good reason, whether it is the number best fitted for this position, and many have proposed to substitute 12 for it (see further, SCALES OF NOTATION).

2. SYMBOLICAL NOTATION.—This is the general designation of those symbols which are used by mathematicians to express indefinite quantities. The symbols are taken generally from the English, Roman, and Greek alphabets, and are apportioned as follows: Algebraic quantities are expressed by the English alphabet; those which are known, by the earlier letters a, b, c, \dots , and those which are unknown, by the later ones, u, v, w, x, y, \dots . In Trigonometry, the letters a, b, c, \dots denote measures of length, and A, B, C, \dots are used to express angles. In Mechanics and Astronomy, the Greek letters are generally used to express angles. When different sets of quantities are similarly related among themselves, the sets are, for convenience, expressed by the same letters; and to prevent confusion, each set has a peculiar mark attached to each symbol, thus, a, b, c, \dots denote one class; a', b', c', \dots another; a'', b'', c'', \dots a third class; and so on; or $a_1, b_1, c_1, \dots, a_2, b_2, c_2, \dots$ etc.

NOTCH, n. *nöch* [O. Dut. *noek*, a notch as in the head of an arrow: prov. Sw. *nokke*, an incision: Norm. F. *noque*, a notch (see NICK 1)]: a hollow cut; a nick: V. to cut in small hollows. NOTCH'ING, imp.: N. the act of cutting into small hollows. NOTCHED, pp. *nöcht*, cut into small hollows. NOTCH-BOARD, a board which, notched or grooved, receives the ends of the steps of a staircase. NOTCH-WEED, a plant called orach; *Chenopodium Vulvária*.

NOTE—NOT GUILTY.

NOTE, n. *nōt* [F. *note*—from L. *nota*, a mark or sign by which a person or thing is known—from *notus*, known: It. *nota*]: something by which a thing may be known; notice; heed; a short remark in the margin or at the bottom of a page; a short letter; a memorandum or short writing to assist the memory; a written or engraved paper given as an acknowledgment of a debt, as a bank-note, a pound-note, a note of hand; a diplomatic communication in writing: consequence or distinction, as a person of note; a musical character; a single sound in music; in *OE.*, reproach; stigma; information; intelligence; a short hint: V. to mark; to notice with care; to observe; to set down in writing; to mark or indorse, as an unpaid bill of exchange. **NO'TING**, imp. **NO'TED**. pp.: **ADJ.** remarkable; celebrated. **NO TER**, a. *tēr*, one who takes notes. **NOTEDLY**, ad. *-lī*, in *OE.*, with observation; with notice. **NOTEDNESS**, n. *-nēs*, the state of being remarkable; conspicuousness. **NOTELESS**, a. *-lēś*, not attracting notice. **NOTELESSNESS**, n. *-nēs*. **NOTEWORTHY**, a. *nōt wēr-thī*, deserving of notice. **NOTE-BOOK**, a book for jottings or memoranda. **NOTE PAPER**, small-sized sheets of paper for writing notes or short letters on. **NOTES**, brief writings to assist the memory in an extended writing, or a speaker in addressing a public audience; commentaries on a book. **TO NOTE A BILL OR DRAFT**, to record on the back of it its non-payment as a ground of a protest.—**SYN.** of 'note, n.': sign; symbol; mark; token; minute; annotation; comment; remark; observation; letter; billet; tone; utterance; sound; voice; reputation; consequence.

NOTE, in Music: a character which by the degree that it occupies on the staff represents a sound, and by its form the period of time or duration of that sound. The notes commonly in use in modern music are the semibreve, ; minim, ; crotchet, ; quaver, ; semiquaver, ; demi-semiquaver, ; and semi-demisemiquaver, . Taking the semibreve as unity, the minim is $\frac{1}{2}$ its duration, the crotchet $\frac{1}{4}$, the quaver $\frac{1}{8}$, the semiquaver $\frac{1}{16}$, the demisemiquaver $\frac{1}{32}$, and the semi-demisemiquaver $\frac{1}{64}$. Notes of greater length than the semibreve were formerly in use—viz., the breve, twice the duration of the semibreve; the long, four times; and the large, eight times the semibreve. Of these the breve,  or , is still sometimes met in ecclesiastical music.—The term note is often used as synonymous with musical sound—See Music.

NOT GUILTY: form of verdict, in a criminal prosecution, also in some civil actions, when the jury find in favor of the defendant or accused party. The verdict is conclusive; and the accused cannot, in criminal cases, be tried a second time.

NOTHING—NOTICE.

NOTHING, *n.* *nūth'ing* [*no*, and *thing*]: not anything; no particular thing; no quantity or degree; no importance, value, or use; no fortune or means; no difficulty; a trifle; a symbol or character denoting absence or want; a cipher (see **NOTHING**, in *Mathematics*): zero (see **NOTHING**, in *Physics*): **AD.** in no degree; not at all. **NOTH'INGNESS**, *n.* *-nēs*, non-existence; valuelessness. **TO MAKE NOTHING OF**, to treat as a trifle; to regard as easy; not to understand; not able to invest with a meaning. **NOTHING LESS**, nothing lower or inferior.

NOTH'ING, in *Mathematics* (symbol 0): total absence of quantity or number, as when equals are subtracted from equals; often employed (see **LIMITS**) to indicate the limit to which a constantly decreasing positive quantity approaches. The absence of number or quantity could be equally well signified by the absence of any symbol whatever, but the presence of '0' shows that in its place some number or quantity might, and under other circumstances would, exist.

NOTHING, in *Physics* (symbol '0'): usually denominated *zero*; having a different meaning from the **N.** in mathematics. Like the **N.** in math., it is the starting-point from which magnitude is reckoned; but while the starting-point in the former case is absolute, in this case it is conventional, and by no means denotes absence of all quantity or magnitude. Thus the zero-point of the thermometer must not be interpreted to signify that when the mercury has fallen to this point atmospheric heat has totally vanished, but must be understood as a mere conventional starting-point for graduation, chosen for convenience, and not even necessarily representing any fixed natural degree of temperature.

NOTICE, *n.* *nō'tis* [*F. notice*—from *L. notitiā*, a being known, a knowing—from *notus*, known]: observation by the eye or other sense; a paper that communicates information: a warning; information given (see **NOTICE**, in *Law*): attention; civility; respectful treatment: **V.** to observe by the senses; to regard; to pay attention to; to treat with attention and civility; to remark. **NOTICING**, *imp.* **NOTICED**, *pp.* *-tist*. **NOTICEABLE**, *a.* *nō'tis-ā-bl*, capable of being observed; worthy of observation. **NOTICEABLY**, *ad.* *-ā-blī*—**SYN.** of 'notice, *n.*': mention; regard; heed; note; remark; respect; consideration; advice; news; information; intelligence; cognizance; intimation; premonition; civility;—of 'notice, *v.*': to observe; heed; perceive; mark; see; mind; mention.

NOTICE, in *Law*: the possessing of knowledge of existing facts or the act of communicating information. It may be either actual or constructive; it is actual when given to a party directly either orally or in writing, and constructive when a party is presumed by law to have information or when a party has knowledge of facts sufficient to put him upon inquiry; thus possession of real estate is constructive notice to a purchaser of the rights of the party in possession, and when a purchaser has knowl-

NOTIFY—NOTITE.

edge of any fact sufficient to put him on inquiry as to the existence of some right or title in conflict with that which he is about to purchase, he is presumed to have made the inquiry regarding such right or else is guilty of negligence. A waiver of a N. by a party for whose benefit such notice should be given is equivalent to N., and dispenses with its necessity. In general, N. to an agent is N. to a principal if the agent comes to such N. in the course of his employment; but in order to charge another principal in another transaction with N. gained by the agent in a different transaction, there must be clear proof that the knowledge or N. was present in the mind of the agent at the time of the particular transaction in question. N. to a corporation binds it only when made to an officer whose situation and relation to the corporation imply that he has authority to act for the corporation in the matter in regard to which the notice is given. A *notice to produce* is a written N. served on an adverse party in an action directing him to produce certain papers at the trial, or in default secondary evidence of such papers will be given. *Notice of dishonor* or *of protest* is a written N. given to an indorser of a promissory note as to a drawer or indorser of a bill of exchange, that such note or bill has been presented for payment or acceptance, and payment or acceptance has been refused; without such N. the indorser or drawer will not be liable for the payment of the note or bill. *Notice to quit* is a N. by a landlord to a tenant that he elects to terminate the tenancy; unless required by statute, it need be served only when the term of the tenancy is indefinite. *Notice of lis pendens* is a N. filed in the office of the clerk of the court, that an action has been commenced; it must state the parties to the action and the object of the action, and when properly made out, it is constructive N. of the action to all persons acquiring rights from the defendant pending the action. *Notice of trial* is a written N. that the action will be brought on for trial at a certain time and place.

NOTIFY, v. *nō-tī-fī* [F. *notifier*, to notify—from mid. L. *notificārē*, to signify or make known—from L. *notus*, known; *fīō*, I am made]: to make known; to inform; to declare; to give notice. NO'TIFYING, imp. NOTIFIED, pp. *-fīd*. NOTIFICATION, n. *nō tī-fī-kā'shūn* [F.—L.]: the act of making known; notice given; the writing or paper containing a notice.

NOTION, n. *nō'shūn* [F. *notion*—from L. *notiōnem*, a making one's self acquainted with, an idea, a notion—from *notus*, known]: thought; knowledge of anything derived from a perception of its relation to other things; idea; sentiment; opinion. NO'TIONAL, a. *-āl*, existing in idea only; imaginary. NO'TIONALLY, ad. *-lī*. NO'TIONIST, n. *-īst*, one holding ungrounded opinions.

NOTITE, n. *nō'tīt*: a peculiar mineral occurring in connection with modern volcanoes, found in the Val di *Noto*, in Sicily, whence the name.

NOTKER BALBULUS—NOTORNIS.

NOTKER BALBULUS, *nōt kēr bāl'bū-lūs*: about 840-912; b. n. Switzerland; monk of St. Gall, and magister in its school. He compiled a martyrology; but his chief work was as composer of church-music and of the 'sequences.' N. was canonized 1513.

NO TO: ancient and handsome town of Sicily, rebuilt on a new site after the earthquake of 1693; 16 m. (24 m. by road) s.w. of Syracuse, 3 m. from the sea. Pop. (1881) 15,925.

NOTOBRANCHIATA, n. plu. *nō'tō-brāngk-ī-ā'tă* [Gr. *nōton*, the back; *branchia*, gills]: a division of the Annelida, so named from carrying their gills upon the back. **NOT OBRANCH IATE**, a. -ī-āt, of or pertaining to.

NOTOCHORD, n. *nō'tō-kawrd* [Gr. *nōton*, the back; *chordē*, a chord]: in *anat.*, the *chorda dorsalis*, an extremely delicate fibrous band in vertebrate embryos, around which the bodies of the vertebræ are afterward developed; the earliest development of the vertebral column. **NOTOCHOR'DAL**, a. -kōr'dāl, having a notochord.—See **DEVELOPMENT OF THE EMBRYO**.

NOTOGLOSSUS, n. *nō'tō glōs'ūs* [Gr. *nōton*, the back; *glōssa*, a tongue]: a muscle of the tongue consisting mainly of longitudinal fibres, lying on the upper surface of the tongue, immediately beneath the mucous membrane.

NOTOPODIUM, n. *nō tō pō dī-ūm* [Gr. *nōton*, the back; *podēs*, feet]: in *zool.*, the dorsal division of one of the foot-tubercles of an Annelide; the dorsal oar.

NOTOREIZAL, a. *nō tō-rī zāl* [Gr. *nōton*, the back; *rhiza*, a root]: in *bot.* having the radicle in the embryonic plant on the back of the cotyledons.

NOTORIOUS, a. *nō-tō-rī-ūs* [mid. L. *notōriūs*; It. *notorio*, notorious—from L. *notārē*, to mark, *notus*, known]: publicly known; manifest to the world, usually in an ill sense; conspicuous. **NOTORIOUSLY**, ad -lī. **NOTORIOUSNESS**, n. -nēs, the state of being notorious. **NOTORIETY**, n. *nō'tō-rī ī-tē* [F. *notoriété*]: exposure to public knowledge, usually to disadvantage.—**SYN.** of 'notorious': famous; distinguished; renowned; remarkable; noted; celebrated.

NOTORNIS, n. *nō tōr'nīs* [Gr. *nōtos* the south; *ornīs*, a bird]: genus of birds of family *Rallidae*, nearly allied to the coots, though in some of its characters it resembles the Ostrich family. One living species only is known, *N. Mantellii*, native of New Zealand. It is particularly interesting, because the genus was originally established and the species characterized by Owen, from remains found with those of *Dinornis* and other large birds of the Ostrich family, called Moas by the New Zealanders. The bird was, however, ascertained 1850 still to exist. It inhabits some of the most unfrequented parts of the Middle Island. It is larger than the other coots, but small in comparison with the true moas. The flesh is said to be delicious. It seems to be a bird likely soon to become extinct unless preserved by human care, and whose domestication would be easy and desirable.

NOTOTHERIUM—NOTRE DAME.

NOTOTHERIUM, n. *nō'tō-thē'rĭ-ŭm* [Gr. *nōtos*, the south; *thērĭōn*, a wild animal]: in *geol.*, extinct genus of gigantic Kangaroo like marsupials, whose remains are found in Australia.

NOTOUR, a. *nō-ŭr'* [F. *notoire*, well known—from L. *notōriŭs*]: in *Scot.*, notorious; persisted in against all warnings.

NOT PROVEN: form of verdict used in Scotland in criminal prosecutions when the jury think there is some foundation for the charge, but not sufficient evidence to warrant a verdict of guilty. In such a case, a verdict 'Not Proven' is substantially a verdict of acquittal. The prisoner cannot be tried afterward, even though new and conclusive evidence come to light.

NOTRE DAME, *nō tr-dâm'*, i.e., *Our Lady*: the old French appellation of the Virgin Mary, and therefore the name of a number of churches dedicated to the Virgin Mary in different parts of France, and particularly of the great cathedral of Paris. This splendid Gothic building occupies the site of one of the old Roman temples to Jupiter, and is the largest and most magnificent of the religious buildings for which the city is famed. The first Christian church to take the place of the heathen temple was dedicated to St. Stephen 365. It was reconstructed and enlarged by Childebert about 522, and then received its present name. For about 500 years it furnished a place of worship for the people of Paris. As it was falling into decay, rebuilding became necessary; and 1163 the cornerstone of the present edifice was laid by Pope Alexander III., at the request of the bp., Maurice de Sully. The great altar was consecrated 1182, and the choir was dedicated 1185. The magnificent western front of the cathedral was begun 1208 under direction of Bp. Pierre de Nemours, and other portions were added at still later periods. The chapels in the rear were erected toward the close of the 13th c., and the towers on the w. front were finished at about this date. By direction of Louis XIII., a new altar took the place 1699 of the one originally built, and various changes were made 1771-78 under direction of a celebrated architect. Part of the ornaments of the interior of the building were destroyed by the mob during the French Revolution, and 1793 the leaders of that movement decreed that it should be known and used as the Temple of Reason. A thorough restoration of the cathedral was made 1846-79 under the architects Lassus and Viollet-le-Duc. There are five naves which extend through the building. The central flèche is 312 ft., the western towers are 224 ft. in height, and the vaulting is 105 ft. from the floor. The entire length of the building is 426 ft. and the width 164 ft. For more than 700 years the cathedral has been the centre of church and state ceremonials in France; and on account of the wealth of its historic associations as well as its magnificent proportions, it ranks among the most notable buildings of the world.

NOTRE DAME—NOTT.

NOTRE DAME, *nō'tr dām*, **UNIVERS'ITY OF**: Roman Catholic educational institution at Notre Dame, Ind., conducted by members of the 'Congregation of the Holy Cross.' It was founded 1842 by the Rev. Edward Sorin, then and for the remainder of his life superior of the Congregation above named. The university has 11 courses leading to degrees, and 21 collegiate buildings. The institution was chartered 1844 by the legislature of Ind., with all the powers and privileges of a univ., and, under the presidency of Mr. Sorin, became the largest and perhaps the most important Rom. Cath. educational establishment in the United States. The pres. of N. D. Univ. 1902 was Rev. A. Morrissey, C.S.C. In 1901-2 there were 45 professors in the collegiate dept. and 15 in the preparatory; pupils in the preparatory 195, in the collegiate 658; number of volumes in the library 55,000, valued at \$75,000; value of scientific apparatus \$200,000, and of grounds and buildings \$2,000,000. The majority of the professorate are members of the Congregation, but there is a minority of lay professors. N. D. Univ. has no endowment, and is supported by the fees of the students; average annual charge to each resident pupil \$300.

NOTT, *nōt*, **ELIPHALET**, DD., LL.D: 1773, June 25—1866, Jan. 29; b. Ashford, Conn.; grandson of the Rev. Abraham N., pastor of the Congl. church in Saybrook, Conn. Dr. N. was bro. of Samuel N., D.D. He taught school at the age of 16, and at 18 took charge of Plainfield Acad., pursuing his mathematical and classical studies meanwhile. He attended Brown Univ. a year, but did not graduate, though he received the degree M.A. 1795. He studied theol. with his brother Samuel, and the same year was licensed to preach by the New London Congl. Assoc., which sent him as a missionary into the then sparsely settled section of N. Y. bordering on Otsego Lake, where he established an acad. and acted as pastor of the church at Cherry Valley 1795. He was in charge of the First Presb. Church, Albany, 1798-1804, and in the latter year was elected pres. of Union Coll. The institution was young, almost destitute of funds, in debt, and without suitable buildings or apparatus. He succeeded in having a law passed by the legislature 1814, enabling him, by means of a lottery, then a legal and usual means of obtaining money, to provide for its most urgent needs. He was a practical educator, and by his remarkable executive ability and power as a disciplinarian, soon attracted students from all parts of the country. During his incumbency of 62 years, there were more than 4,000 graduates. The semicentennial of the coll. was held in the presence of 600 of his former pupils. He governed by the parental system, rejecting rigid conventional methods. He was an earnest advocate of temperance, an opponent of slavery, and a strong supporter of civil and religious freedom, speaking and writing extensively on these subjects. His published writings consist mainly of sermons and addresses, that on the death of Alexander Hamilton

NOTT—NOTTINGHAM.

having a national reputation. He also published *Counsels to Young Men* and *Lectures on Temperance*. He was not only a skilful financier and an able theologian, but also, beyond question, one of the most finished pulpit orators of his time. His many sided genius and ability were apparent in other directions. His mechanical skill was great; his patents on inventions pertaining to the application of the laws of heat numbered 30, the most notable being the first stove for burning anthracite coal. One of his inventions, known as a 'novelty,' so called because of its economical peculiarities, gave rise to the famous iron manufactories, the Novelty Works. His force of character was indomitable, and in all things he was controlled by high Christian principles. He received the degree D.D. from Princeton Coll. 1805, and LL.D. from Brown Univ. 1828. He died in Schenectady, N. Y.

NOTT, SAMUEL: missionary: 1788, Sep. 11—1869, June 1; b. Franklin, Conn.; son of Samuel N., D.D., and nephew of Eliphalet N., D.D.. LL.D. He graduated at Union College 1808, and at Andover Theol. Seminary 1810. He was sent as missionary to India by the American Board 1812, but returned 1816 because of failing health. He afterward taught school in New York. He held pastorates subsequently in Galway, N. Y., and Wareham, Mass. He established a private acad. at the latter place 1849, which he conducted with success for 17 years. He died in Hartford, Conn.

NOTTINGHAM, *nōt'ing-am*: municipal and parliamentary borough of England, cap of the county of the same name, and a county in itself, on the Leen at its junction with the Trent, 128 m. n.n.w. of London. It is built principally on the slope and at the foot of a rocky eminence, and architecturally it has within recent years been much improved. The market-place is 5½ acres in extent, surrounded by lofty buildings. The Trent, which passes about a mile s. of the town, and is here about 200 ft. wide, is crossed by railway bridges, and by an ancient bridge of 19 arches. The exchange, the town and county halls, the House of Correction, St. Mary's Church, the Rom. Cath. Cathedral (by Pugin), the new Free Grammar-school erected 1868, new Post-office (1868), and the Albert Hall (1876), are noticeable buildings. The Free Grammar school (endowment about £1,000 a year) was founded 1513. University College, mainly a science school, was opened in a noble range of buildings 1881. There is a Congl. Institute for missionary and evangelistic education. An art-school, natural-history museum, and public library are among the flourishing institutions of N.; and there are hospitals for the poor and infirm. Of the manufactures which are various and important, the principal are bobbin net and lace, and cotton, silk, and merino hosiery; and there are cotton, silk, and flax mills, bleaching-works, also iron and brass works. New municipal buildings were erected 1883. N. has been a manufacturing town for 600 years: it is believed to have been a Celtic settlement, and rose to importance in the 9th c.

NOTTINGHAM—NOUMEA.

The ancient castle of N., ruined during the civil wars, was rebuilt after the Restoration, and burnt during the Reform Bill riots. In 1878 it was restored, and transformed into a museum and picture-gallery.—Pop. (1871) 86,621; (1881) mun. bor. 186,575; (1901) 239,753.

NOTTINGHAM, or NOTTS: inland county of England, bounded n. by Yorkshire and Lincolnshire, e. by Lincolnshire, s. by Leicestershire, w. by Derbyshire; length n. to s. about 50 m., greatest breadth about 25 m.; 825 sq. m., or 526,176 acres. The meridian of 1° w. falls along the middle of the county, and may be said to divide it into two nearly equal portions, of which the e., comprising the vale of the Trent, is level, and the w. is occupied by hills of no great height. In the s. of the county are the wolds, consisting of upland moors and pasture-lands, broken up by many fertile hollows. The country generally is finely wooded, and in the w. are the remains of the royal forest of Sherwood, famous as the chief haunt of Robin Hood. The principal rivers are the Trent, and its tributaries the Erewash, Mann, and Idle. The Nottingham and Grantham canal in the s. connects the Trent with the Witham, and these two rivers are also connected by the Fosse Dyke canal, which, running n.w. from the city of Lincoln, joins the Trent on the n.e. boundary of the county. By the rivers, canals, and the N. Midland, Sheffield and Lincoln, and Great Northern railways, there is direct communication in every direction. The climate, especially in the e., is remarkably dry. The soil is various; and, in productiveness, the land is not above mediocrity. The usual crops are raised; there are many hop-plantations, and much land is laid out in market-gardens. Extensive tracts have been planted recently. Pop. (1871) 319,758; (1891) 231,745; (1901) 274,684.

NOTTWHEAT, n. *nōt'hwēt* [OE., *nott*, shorn]: wheat not bearded.

NOTWITHSTANDING, conj. prep. *nōt'wīth stānd'ing* [formed of *not*, *with*, and *standing*]: without hindrance from; not hindering; in spite of; despite; although; nevertheless; however.

NOUCH, n. *nowch*: the same as OUCH, which see.

NOUGHT, n. *nowt* [AS. *naht* or *nauht*; Ger. *nicht*, nought]: not anything; nothing: AD in no degree. To COME TO NOUGHT, to be brought to nothing. To SET AT NOUGHT, to slight; to despise; to disregard; the same as NAUGHT, which see.

NOU'KHA: see NUKHA.

NOUL, or NOULE, or NOWL, n. *nowl* [AS. *hnol* or *cnoll*, knoll, top]: in OE., the crown or top of the head; the head.

WOULD, n. *nūld* [AS. *ne wolde*, not would]: in OE., would not.

NOUMEA, *nō-mā ā'* (called also *Port de France*, *por dēh frōngss*): chief settlement in the French penal colony of New Caledonia (q.v.). Pop., besides convicts and soldiers, (1901) 4,010.

NOUMENON--NOUN.

NOUMENON, n. *now mē-nōn*, **NOUMENA**, n. plu. *now'-mē-nā* [Gr. *noumēnon*, the thing perceived—the pres. part. pass. of *noōō*, I perceive—from *nous*, the mind]: that which constitutes our very being, our very essence. *Note*.—Kant's distinction between *phenomenon* and *noumenon* may be stated thus: the former is subject to mechanical laws, the latter 'is one with beings who are themselves free': the former is produced by our imagination and sensibility, the latter 'constitutes our very being, our very essence.'

NOUN, n. *noun* [OF. *non*, a noun—from L. *nomen*; F. *nom*, a name]: in *gram.*, a part of speech embracing the name of a person, place, animal, thing, or quality; a name; a substantive.—*Noun*, in Grammar, is a word that names' or designates the person or thing spoken about. In a wide sense, such words as *rich*, *tall*, are nouns, as well as *John*, *man*, *tree*; for they are names applicable to all objects possessing these attributes. But as words like *John*, *man*, *tree*, suffice of themselves to mark out or designate an object or a definite class of objects, while words expressive of a single attribute, like *rich*, *tall*, can be used only in conjunction with (or with the added signification of) such a word as *man* or *tree*, the one class are called Adjective Nouns, or simply Adjectives (q.v.), while the other are called Substantive Nouns, or simply Substantives or Nouns. Nouns or Names, in this narrower sense, may be divided into classes in a variety of ways, according to the ground taken for the division.—One of the distinctions commonly made by grammarians is into *Proper Nouns* and *Common Nouns*. A proper N. is usually defined as 'the name of any individual person, or place,' as *John*, *London*; while a common N. is applicable to every individual of a class of objects, as *prince*, *city*. But this definition fails to point out the real difference; for there are several Londons, and there are more Johns than princes; other things also have proper names, besides persons and places, as ships (the *Constitution*), and bells (*Big Ben*). On the other hand, though 'Providence' is used as applicable to only One Being in the universe, it is not a proper N. Wherein, then, lies the difference? To answer this question, we must advert to an important distinction made by logicians with regard to the import of names. A word is said to *denote* all the objects to which it is applicable as a name; thus, the word *man* is a name for all the objects known individually as James, John, Adam, Pope Hildebrand, Cromwell, etc., and therefore denotes the whole human race; but while thus denoting or naming them, it also implies something concerning them; in the language of logic, it *connotes* that they possess certain attributes, namely (1) a certain corporeal form, known as the human form; (2) animal life; (3) rationality. All this, at least, is included in the *meaning* or connotation of the word 'man.' Now, if we consider any N. of the class called common, we find that while it denotes, or names, or points out a certain object, or class of objects, it also conveys or implies some qualities or facts concerning them; in other words, all such names are *connotative*, or have a meaning.

NOUN.

Not so with proper nouns. To say that a man is called John Butler, informs us of no quality that he possesses, or of any fact except that such is his name. The name itself conveys no meaning; it is *non-connotative*. And this is what really constitutes a proper name; it is affixed to an object, not to convey any fact concerning it, but merely to discriminate it as an individual or set it apart from other objects of thought and speech. Proper names, indeed, are often given at first on account of the object possessing certain attributes; but once given, they do not continue to connote those attributes. The first John Baker was probably so called because he exercised the trade of baking; but his ceasing to bake would not have made him lose the name; and his descendants were called Baker, regardless of their occupation. In this view the A, B, C, etc., which a geometrician affixes to the several angles of a figure, are as much proper names as Tom, Lawrie, etc., applied to the individual bells of a chime. The proper contrast, then, to a Proper N. is not a Common N.—meaning by that a name common to a class of objects—but a Significant Noun.

Of Significant Nouns, by far the greater number are General or Class Names; that is, they can be applied to any individual of a class of objects, implying that all these individuals have certain attributes in common—as *quadruped*, *book*. The quadruped spoken of may perhaps be a *horse*, and here we have another class-name, applicable to the same object, but of less generality than ‘quadruped.’ *Animal*, again, is more general than quadruped, being applicable to a far wider class. But it is important to observe, that as the number of objects that the terms are applied to, or denote, increases, the number of attributes that they imply—in other words the amount of their meaning—diminishes. To call an object an ‘animal,’ merely implies that it is organized and is alive (with that kind of life called animal life); to call it a ‘quadruped,’ implies all this and a number of attributes in addition; and to call it a ‘horse,’ implies a still further addition.

It is to this class of words that the term Common Nouns is properly applicable; and the contrast to them is not Proper Nouns, but what might be called Singular Nouns, such as ‘God,’ ‘providence,’ ‘universe.’

Collective Names are such as *regiment*, *fleet*, *senate*, *shoal*. They form a subdivision of Class Names or Common Nouns; for *regiment* is applicable to all collections of men organized in a particular way.

Names of Materials are such as *iron*, *water*, *sugar*, *wheat*. These two classes appear in many cases to merge into each other. In both, the objects named consist of an aggregation; but in collective names, the parts forming the collection are thought of as individual objects; as the *soldiers* of a regiment, the *fishes* composing a shoal. Substances, again, like iron, gold, water, are not made up of *definite* individual parts (at least to our senses; and in such as wheat, sand, the name of the individual visible part (*grain of wheat*, *grain of sand*) is derived from the name of the

NOUREDDIN-MAHMÛD.

mass, showing that the idea of the individual is swallowed up in that of the mass.

A convenient term for names of materials or substances is that used by German grammarians—*Stuff-nouns*. Sometimes the same word is used as a *stuff-noun* and as a *class-noun*. Thus: 'The cow eats *grass*' (*stuff-noun*); 'The botanist studies the *grasses*, and has found a new *grass*' (*class-noun*); 'They had *fish* (*stuff-noun*) for dinner, and consumed four large *fishes*' (*class-noun*).

Names of materials are not, like collective nouns, a subdivision of common nouns; they belong to the contrasted class of singular nouns; and, when the substance is simple or invariable in composition, cannot be used in the plural; as *gold, water, beef*.

Abstract Nouns.—In the expression 'hard steel,' or 'the steel is hard,' the word *hard* implies a certain quality or attribute as belonging to the steel. This quality has no existence apart from steel or some other substance; but I can withdraw (*abstract*) my thoughts from the steel in other respects, and think of this quality as if it had an independent existence. The name of this imaginary existence or abstraction is *hardness*. All words expressive of the qualities, actions, or states of objects, have abstract nouns corresponding to them; as *brave*—*bravery*; *strike*—*stroke*; *well*—*health*. In opposition to abstract nouns, all others are *concrete nouns*—that is, the attributes implied in them are considered as embodied in (*concrete*, Lat. growing together) the actual existences named.

NOUREDDIN-MAHMÛD, *nór-èd-dēn' mách-mód'*, MALEK-AL ADEL, *mál-ék-al-â del*: one of the most notable men of his time, and the scourge of the Christians who had settled in Syria and Palestine: 1116, Feb. 21—1174, May 15; b. Damaseus. His father, Omad-ed din Zengui originally gov. of Mosul and Diarbekir on behalf of the Seljuk sultans, had established his independence, and extended his authority over n. Syria, including Hems, Edessa, Hamah, and Aleppo. N. succeeded him 1145, and the better to carry out his ambitious designs, changed the seat of govt. from Mosul to Aleppo. Count Joscelin of Edessa, thinking the accession of a young and inexperienced sovereign afforded him a favorable opportunity of regaining his territories, made an inroad at the head of a large force, but was signally discomfited under the walls of Edessa, his army, with the exception of 10,000 men, being annihilated. The report of N.'s success being conveyed to w. Europe, gave rise to the second Crusade. The Crusaders were, however, foiled by N. before Damascus, and, being defeated in a number of partial conflicts, abandoned their enterprise in despair. N. next conquered Tripolis and Antioch, the prince of the latter territory being defeated and slain in a bloody conflict near Rugia (1149, June 29), and before 1151 all the Christian strongholds in Syria were in his possession. He next cast his eyes on Egypt, which was almost in anarchy under the feeble sway of the now effeminate Fatimites, and, as a preliminary step, 1156, he took possession of Damascus, which till this time had been

NOURICE—NOURSLE.

ruled by an independent Seljuk prince; but a terrible earthquake which at this time devastated Syria, levelling large portions of Antioch, Tripolis, Hamah, Hems, and other towns, put a stop to his scheme for the present, and compelled him to turn all his energies to recovery from this destructive visitation. An illness which prostrated him, 1159, enabled the Christians to recover some of their lost territories, and N., in attempting their resubjugation, was totally defeated near the Lake of Gennesareth by Baldwin III., King of Jerusalem; but undismayed by this reverse, he resumed the offensive, defeated the Christian princes of Tripolis and Antioch, making prisoners of both, and again invaded Palestine. Meanwhile, he had obtained the sanction of the caliph of Bagdad to his projects concerning Egypt, and, the Moslem believers flocking to his standard from all quarters, a large army was soon raised, which, under his lieut Shirkoh, speedily overran Egypt. Shirkoh, dying soon after, was succeeded by his nephew, the celebrated Salah-ed-din (q.v.), who completed the conquest of the country. N., becoming jealous of his able young lieut., was preparing to march into Egypt in person, when he died at Damascus. N. is one of the heroes of Moslem history. Brought up among warriors who were sworn to shed their blood for the cause of the Prophet, he was not, like the majority of his co-religionists, a mere warrior or conqueror, but zealously promoted the sciences, arts, and literature, and established a strict administration of justice throughout his dominions. In his high station he retained the simplicity of the first caliphs. He was revered by his subjects, both Moslem and Christian, for his moderation and clemency; and even his bitter enemies among the Christian princes extolled his chivalrous heroism and good faith. He had the faculty of impressing his own fiery zeal for the supremacy of Islam upon his subjects, and their descendants at the present day have faithfully preserved both his name and principles.

NOURICE, *n.* *nŭr'is* [*F. nourrice*, a wet-nurse]: in *OE.*, a nurse.

NOURISH, *v.* *nŭr'ish* [*F. nourrice*, a wet-nurse; *nourrissant*, nourishing—from *nourrir*, to nourish: *L. nutriō*, I nurse or suckle]: to supply with food; to support; to encourage; to cherish; to train or educate: *N.* in *OE.*, a nurse. **NOURISHING**, *imp*: **ADJ.** promoting growth; nutritious. **NOURISHED**, *pp.* *nŭr'isht*. **NOURISHER**, *n.* *-er*, one who or that which nourishes. **NOURISHABLE**, *a* *-ā-bl*, capable of receiving nourishment. **NOURISHMENT**, *n.* *-mēnt*, that which nourishes; food; sustenance. **NOURISHINGLY**, *ad.* *-lŭ*.—**SYN.** of 'nourish, *v*': to feed; provide; nurture; supply; comfort; educate; intrust;—of 'nourishment'. food; support; sustenance; nutriment; nutrition; sustentation.

NOURSLE, *v.* *nēr'sl*, or **NOUSLE**. *v.* *nŭz'l* [see **NURSE**]: in *OE.*, to nurse up; to feed with delicacies. **NOURS'LING**, or **NOUS'LING**, *imp.* **NOURSLED**, *pp.* *nēr'sld*, or **NOUSLED**, *pp.* *nŭz ld*.

NOUS—NOVARGENT.

NOUS, n. *nós* or *nows* [Gr. *nous*, mind, intelligence, perception; in anc. Gr. philosophy, the perceptive faculty (comp. Gr. *gnōō*, L. *gnosco*, Eug. *know*; also Gael. *nos*, knowledge, custom)]: in Platonic philosophy, the highest thought, the supreme reason; in later Platonism, that living effluence from the original Reason which in the beginning imaged that Reason and was the archetype of all things created by it. In modern college and familiar slang, the word denotes knowingness, natural acumen, ready smartness, 'gumption.'

NOUVEAU RICHE, phrase, *nô-vô' rēsh*, plu. **NOUVEAUX RICHES** [Fr. new rich]: one whose wealth is of recent acquirement; especially one whose conduct in reference to his large possessions shows him unused to them.

NOUVEL, *nô-vēl'*, **GABRIEL EDOUARD**: 1636-94, Nov.; b. Bapaume, France. He left college and went to Canada 1655, was placed in command of the Huron Indians near Sault Ste. Marie, became adjt.gen. at Montreal 1672, obtained govt. land grants, and attempted to found a colony at the mouth of the Niagara river 1675. He was killed in an attack on Fort Nelson.

NOVA, *nô-vâ*, **JUAN DE**: navigator: b. in Spain; d. about 1520. He became a skilful pilot, entered the service of the king of Portugal 1501, was placed in command of an expedition with which Amerigo Vespucci was connected, discovered various points in S. America, and won the friendship of the natives. He died in the E. Indies.

NOVACULITE, n. *nô-văk'ū-līt* [L. *novaculă*, a razor]: a mineralogical term for whet-slate or razor-stone, in allusion to the principal purpose for which it is employed. It is a siliceous slate, the homogeneous compact portion of the argillaceous schists of the paleozoic period.

NOVALIS: see **HARDENBERG**, **FRIEDRICH VON**.

NOVARA, *nô-vâ râ*: province in Piedmont, Italy: s. of Switzerland, w. of Lombardy, e. of Turin, and n. of the river Po; area about 2,525 sq. m. It is traversed by the Alps, but contains many very fertile valleys, in which hemp and various kinds of grain are grown. Silk is a product of some importance. The principal river is the Toce, fed by numerous Alpine streams. Cap., the city of Novara. Pop. of prov. (1891) 732,104; (1901) 743,115.

NOVARA, *nô-vă'râ*: historic town, province of Novara, Italy, about 30 m. from Milan. Until recently it was surrounded by high walls with 4 gates for entrance. It has a magnificent cathedral dating originally from the year 400 (mostly rebuilt 1860-70), numerous fine public and private buildings, large municipal library, and several educational and charitable institutions. There are manufactures of cotton, linen, earthenware, candles, and starch, and extensive trade in grain. Several important battles have been fought in this vicinity. Pop. (1901) 45,248.

NOVARGENT, *nô-râr'jēnt* [L. *novus*, new; *argentum*, silver]: preparation of chalk moistened with a solution of oxide of silver in a solution of cyanide of potassium.

NOVA SCOTIA.

NOVA SCOTIA, *nō'va skō'shī-a*: province of the Dominion of Canada, bounded n.w. by New Brunswick and the Bay of Fundy, n. by the Straits of Northumberland and the Gulf of St. Lawrence, and on the other sides by the Atlantic Ocean. It consists of two portions; N. S. proper, a large peninsula connected with New Brunswick by an isthmus about 17 m. wide; and the island of Cape Breton (q.v.): total area, 21,781 sq. m. The peninsula, about 280 m. long and 50 to 100 broad, extends e.n.e. and w.s.w. Cape Breton lies n.e. of N. S. proper, separated by a narrow strait, the Gut of Canso, 16 m. long, and half a mile to 2 m. wide. Sable Island (reported 1888), about 19 m. long (said to have been 40 m. in 1775), 1½ m. wide, is surrounded by a dangerous, widely-extended sand bank: the island is about 90 m. from the nearest coast of N. S., lat. 44° n., long. 60° w. It is formed of sand-hills thrown up by the sea, some of them about 80 ft. in height; and portions are being rapidly washed away by the sea. The island is covered with wild grasses, which support herds of wild horses, known as Sable Island ponies. It is in the track of vessels trading between America and Britain, and because of the number of wrecks that take place on its shores, a supt and several men are stationed here to rescue shipwrecked mariners.—The N. S. east-line is about 1,000 m. long, and the shores, much indented, abound in excellent bays and harbors, of which the chief are Chedabucto Bay, Halifax Harbor, St. Margaret's, Mahone, and St. Mary's bays, Annapolis, Minas, and Chignecto basins, and Pictou Harbor. A ship-railway known as the Chignecto ship-railway is being constructed between the n. end of the Bay of Fundy and the Gulf of St. Lawrence. It is to be 17 m. long, and to convey ships of 1,000 tons gross register laden, up to 2,000 tons dead weight. It will greatly shorten the passage between the Bay and the Gulf. There are numerous rivers, but few are more than 50 m. in length; the most important are the Avon, the Annapolis, and the Shubenacadie. N. S. contains about 400 lakes, of which the Bras d'Or, in Cape Breton, covers an area of 500 sq. m., or about one-sixth of the entire area of the island; it is, however, rather a deep land-locked inlet of the sea than a lake; its scenery is unique and impressive. The surface is irregular and undulating, but not elevated. Ranges of hills traverse the centre of N. S. in the direction of its length. The Cobequid Mountains 60 m. from the Atlantic, 1,100 ft. high, traverse the peninsula from the Bay of Fundy to the Straits of Canso. The soil in the valleys is rich and fertile, producing all the fruits of temperate climates; and, especially in the n., the uplands also are fertile. The valley of the Annapolis is like a garden for richness and cultivation, and presents varied and charming scenery. The climate is remarkably healthful, its rigor being modified by the insular situation of the province, and by the influence of the Gulf Stream. The mean temperature for the year is 42.09° at Pictou, and 43.6° at Windsor. The extreme limits of the thermometer may be stated at -15° Fahr. in winter, and 95° in the shade

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in summer. The province abounds in mineral riches, including gold, coal, and iron. Gold was discovered in the colony 1861, March, on Tangier river, about 40 m. e. of Halifax. The chief diggings are along the Atlantic coast, but the gold-bearing region extends over 3,000 sq. m. The gold mines have been worked steadily, and in many cases profitably. The average earning of each miner is over \$600 a year; annual yield 10,000 to 14,000 ounces, total yield from the beginning till 1882, about 400,000 ounces. Coal and iron are abundantly distributed and extensively worked; the capital invested in coal-mining is estimated at \$11,680,000. Nearly 1,000,000 tons of coal are raised annually. Of the entire area of the colony, 10,000,000 acres are considered good land, and of these above 1,000,000 acres are under cultivation. Three-fourths of the whole area are comprised in the peninsula of N. S., and the remainder in the island of Cape Breton. The principal agricultural products are hay, wheat, barley, buckwheat, oats, rye, Indian corn, potatoes, and turnips. The waters around the colony abound in fish, as mackerel, shad, herring, salmon, etc., and the fisheries are pursued with ardor and increasing success. The value of the annual take may amount to \$7,000,000; and more than 20,000 men are employed in the fisheries. Manufactures include coarse cloths and flannels, leather, saddlery, machinery, tobacco, and paper; and shipbuilding is carried on. Among chief imports are cottons, silks, woollens, sugar, and spirits. In three years, 1879 to 1881, the value of exports ranged from \$7,365,000 to \$8,250,000; imports from \$7,000,000 to \$8,000,000. About 50 newspapers and periodicals are published. There are 1,150 m. of telegraph, and more than 300 m. of railway. N. S. has 5 colleges, 10 academies, and 1,700 other schools.

N. S. is supposed to have been visited and 'discovered' by the Cabots 1497. Its first colonists were Frenchmen, who established themselves 1604, but were expelled by settlers from Virginia, who claimed the country by right of discovery. Under the French settlers it bore the name Acadia (Acadie); but its name was changed for its present one 1621, when a grant of the peninsula was obtained from James I. by Sir William Alexander, whose intention was to colonize the whole country. Having found, however, that the localities which they had chosen as suitable for settlement were already occupied, the colonists returned to the mother-country. In 1654, the French, who had regained footing in the colony, were subdued by a force sent out by Cromwell. By the treaty of Breda, the country was ceded to the French 1667, but was restored to the English 1713. After the middle of the 18th c., strenuous efforts were made to advance the interests of the colony. Settlers were sent out at the expense of the British govt. The French, who had joined the Indians in hostilities against the English, were either expelled or completely mastered, and Cape Breton, which was French till 1763, and was subsequently a separate province, was united to N. S. 1819. N. S. was incorporated with the Dominion of

NOVATIAN.

Canada 1867, and is represented in the Canadian parliament by 10 senators and 21 members of the lower house. It has also its own local legislature and lieut. gov.; the legislature consisting of a council and a house of assembly elected by the counties—which are 18 in number—and the cities, the chief of which are Halifax, Yarmouth, Truro, and Pictou.—Pop. of prov. (1891) 450,523; (1901) 459,574.

NOVATIAN, *n. nō-vā'shī-ăn*: in *eccles. hist.*, one of the followers of *Novatian*, A.D. 250, who held that the lapsed should not be readmitted to church privileges, and that second marriages were unlawful. **NOVA'TIANISM**, *n. -izm*, the opinions of the Novatians.

NOVATIAN, *nō-vā'shī-an*: a priest of the Rom. Church: b. abt. the beginning of 3d c.; the leader of a sect called after his name. The place and time of his birth are not known with certainty. N. had been a stoic philosopher, but after his arrival in Rome was converted to Christianity, and being seized with sudden illness while still a catechumen, received what was called *clinical* baptism; that is, baptism by sprinkling, administered on a sick-bed, and without the solemn ceremonial. Such baptism was, in ordinary circumstances, an impediment to holy orders. Notwithstanding this irregular baptism, N. was promoted to orders by Fabian the Roman bishop; and soon afterward showed his weakness by flying during a persecution. At this time a controversy arose about the manner of dealing with the lapsed; that is, those who during persecution fell away from Christianity, and to save their lives offered sacrifice to idols. N. at first inclined to the milder side, but on the election of Cornelius to the Roman bishopric to which N. had aspired, and on Cornelius taking the indulgent course toward the lapsed, N., with Novatus and some other discontented priests of Carthage, opposed his authority, and eventually N. was chosen by a small party, and actually ordained bishop, in opposition to Cornelius. The party who espoused his cause was called by his name. They were confined mainly, in the first instance, to Rome and to Carthage, where a kindred conflict had arisen. They held that in the heinous crime of idolatry through fear of suffering or death, the church had no power to absolve the penitent; and therefore, though it does not appear that they excluded such sinners from all hope of heaven, yet they denied the lawfulness of re-admitting them to the communion of the church. This doctrine they extended at a later period to all grievoussins, of whatever character. N. may thus be regarded as the first anti-pope. The churches throughout Italy, Africa, and the East adhered to Cornelius; but the N. party set up bishops and established churches not only at Carthage, but at Constantinople, Alexandria, Nicomedia, Phrygia, Gaul, Spain, and elsewhere. They claimed for themselves a character of especial purity, and assumed the appellation of Cathari (Puritans). The time and manner of the death of N. is uncertain. According to Socrates (*Hist. Ecc.* iv. 28; v. 21; vii. 5, 12, 25), he died a martyr in the persecution of Valerian, but this is improbable. He was a man of

considerable learning, and the work recently discovered in one of the monasteries of Mount Athos (*Origen's Philosophumena*, Oxford, 1851) is by some ascribed to him. His sect survived long after his death. An unsuccessful effort was made in the council of Nice to re-unite them to the church; and traces of them are discoverable as late as the end of the 6th century.

NOVATION, n. *nō-vā'shūn* [F. *novation*—from L. *novationem*, newness—from *novus*, new]: in law, the substitution of a new obligation for another, which operates to the extinction of the latter; in *OE.*, something new; an innovation. N. is the substitution of a new obligation for an existing one; the debtor is discharged from his original liability by assuming a new liability to a new creditor by the order of his original creditor. Thus A owes B a sum of money; B owes C the same sum; B at the request of C directs A to pay C. If A consents to this, he is discharged from his obligation to B, and a new contract has come into existence between A and C, on which C may commence an action in his own name against A. The elements necessary are the consent of all the parties, the extinction of the old obligations, and the assumption of a new obligation by the original debtor to a new creditor. When N. occurs, the old rule that a personal contract could not be assigned so as to give the assignee a right of action in his own name, is not violated; because no assignment of the contract takes place; the old contract is extinguished and a new contract is made; the whole transaction is governed by the rules applicable to contracts. There must be a promise and a consideration for the promise. The promise is to pay the debt to the new creditor; and the consideration is the extinguishment of the original debts. If either this promise or this consideration is lacking, the transaction would be merely an assignment of a contract or an order to pay which would be revocable at any time by the old creditor, and the new creditor, under the old rule of law, could not prosecute an action in his own name to enforce the contract; but when all parties have assented to the new agreement, the old debt is discharged and the order is irrevocable. This term N. is extremely technical and has not been much used either in English or American law; but the transaction itself is frequent. When a mortgager conveys the mortgaged premises, and his grantee agrees to assume and pay the mortgage debt, and the mortgagee accepts him as a debtor, a N. results: or when a new firm takes upon itself the liabilities of the old firm, and the creditor, with knowledge of that fact, agrees to accept the new firm as a debtor and to release the old firm, a N. takes place. The release of the old debt by the new creditor may be inferred by the acceptance of interest, as in the case of the mortgagee, or by the receiving of new notes for the liabilities of the old firm, as in the case of the new partnership. Where, however, the amount, the terms and mode of payment of the debt, the rate of interest, and nature of the securities are changed, no N. takes place, unless all the parties clearly express that a N. shall take place.

NOVA ZEMBLA-NOVELLO.

NOVA ZEMBLA. *no-va z'em bla* (Russ. *Nowaja Zemlja*, New Land): chain of islands in the Arctic Ocean (lat. between $70^{\circ} 30'$ and $76^{\circ} 30'$ n., and long. between 52° and 66° e.), and included within the Russian govt. of Archangel: length of the chain, 600 m.; average breadth, 60 m.; 40,000 sq. m. The most southern island—a large island—is specially called N. Z.; of the others, which are small, the principal are Matthew's Land and Lütke's Land. They were discovered 1553, and are wild, rocky, and desolate—the vegetation being chiefly moss, lichens, and a few shrubs. The highest point in the chain is about 5,000 ft. above sea level. Mean temperature in summer, at the s. extremity, 35.51° ; in winter, 3.21° . N. Z. has no permanent inhabitants, and the interior is nearly unknown; but as the coasts swarm with whales and walruses, and the interior with bears, reindeers, and foxes, the islands are periodically frequented by fishermen and hunters. See Markham's *Polar Reconnaissance* (1881).

NOVEL, n. *nōv'ěl* [OF. *novel*, new; F. *nouvelle*, news—from mid. L. *novella*, a new thing: L. *novellus*, very young—from *novus*, new]: a tale or narrative professing to give a picture of human life in some of its aspects, particularly the natural workings of the human heart; a fiction (see **NOVELS AND ROMANCES**): **ADJ.** new; unusual; strange; of recent origin or introduction. **NOVELS**, a part of the Justinian law. **NOVELETTE**, n. *nōv'él-èt* [dim. of *novel*]: a short tale or story. **NOVELIST**, n. *-íst*, a writer of novels. **NOVELTY**, n. *-tì*, a new or strange thing; recentness of origin—**SYN.** of 'novel, a.': recent; fresh; modern; rare.

NOVELDA, *nō-vèl dá*: town of Spain, province of Alicante, 18 m. w. from Alicante, on the railway between Madrid and Alicante. There are corn and oil mills, brandy distilleries, and manufactures of lace. Pop. (1877) 8,802.

NOVELLÆ: see **JUSTINIAN**.

NOVELLO, *no-vèl'lø*, CLARA: vocalist: b. 1818; daughter of Vincent N. Her talent showed itself very early. At the age of ten she became a pupil of the French Acad. of Singing for Church Music, studied in Paris several years, and afterward in Italy and Germany. In England and in Italy, 1840-48, she created quite a *furor*: her singing has indeed hardly been rivalled in equality, flexibility, and executive skill. In 1848 she married Count Glincci, and quitted the stage, returning to it 1850-60.

NOVELLO, VINCENT: musical performer and composer: 1781, Sep. 6—1861, Aug. 9; b. London, of an Italian father and English mother. At the age of 16 he was organist in the chapel of the Portuguese embassy; and even then had attained much of his famous proficiency on the organ. He was one of the founders of the Philharmonic Soc. His musical compositions, very numerous, chiefly sacred, are considered to have contributed much to improve cathedral music; and as a painstaking editor of unpublished works of eminent musicians, he did great service to musical literature. He died at Nice.

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1. *Ancient Classical Prose Fiction*.—The earliest known Greek compositions in fiction are the *Milesiaca*, or *Milesian Tales*, said to have been written chiefly by one Aristides. The Milesians were a colony of Ionic Greeks who settled in Asia Minor, and fell under the dominion of the Persians B.C. 494. They were a voluptuous, brilliant, and inventive race, and are supposed to have caught from their Eastern masters, whom they somewhat resembled, a liking for that particularly oriental species of literature—the imaginary story or narrative. None of the Milesian Tales are extant, either in the original Greek or in the Latin version made by Sisenna, the Roman historian, about the time of Marius and Sulla; but we have about 40 stories by Parthenius Nixæas, supposed adaptations from them. The collection of Parthenius is entitled *Peri Erotikôn Pathemátôn*, and is dedicated to Cornelius Gallus, the Latin poet, contemporary and friend of Virgil. Judging from this later set of fictions, concerned mainly with the description of all sorts of seduction, of criminal and incestuous passions, and of deplorable terminations to wretched lives, there is little cause, either morally or æsthetically, to regret the loss of their more famous prototypes. In Greece Proper, nothing was done, so far as we know, in the way of novel or romance, until after the age of Alexander the Great. It has been conjectured, not improbably, that his Eastern conquests had a potent effect in giving this new bent to the fancy of his countrymen. Clearchus, disciple of Aristotle, wrote a history of fictitious love-adventures, and was, perhaps, the first European Greek novelist, and the first of the long series of *Erotikoi*, who reach down to the 13th c. after Christ. Not long after him came Antonius Diogenes, whose romance in 24 books, entitled *Ti hyper Thoulên Apista* (Of the Incredible Things beyond Thule), was founded on the wanderings, adventures, and loves of Dinias and Dercyllis. It appears to have been held in high esteem, and was at least useful as a store-house, whence later writers, such as Achilles Tatius, derived materials for their more artistic fictions. The work has not been preserved, but Photius gives an outline of its contents in *Bibliotheca Cod.*

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An interval of several centuries elapses before another Greek novelist or romancist appears. Be the cause of this what it may, the ever increasing luxury and depravity of the pagan imperial world combined to develop and intensify that morbid craving for horrible, magical, and supernatural incidents which in general fill the pages of the romancists of the empire. The first names in the new series are Lucius of Patra (*Patrensis*) and Lucian (q.v.), in the 2d c. after Christ, during the reign of Marcus Antoninus; but as Lucius simply collected accounts of magical transformations (*Metamorphoses*), he is perhaps not to be regarded as a novelist at all; while Lucian was really a humorist, satirist, and moralist in the guise of a storyteller—in a word, a classic Rabelais and Heine, and as far as possible from the wonder-loving school of Erotics, with whom he has only an incidental connection by the external form of some of his writings. The first of the new series of romance writers, strictly so called, is Iamblichus (not the Neo-Platonic philosopher), whose *Babylonica* is, indeed, no longer extant; but a fair estimate may be formed of it from the epitome of Photius. The next notable name is Heliodorus (q.v.), Bp. of Trikka, 4th c. This Christian writer, whose *Loves of Theagenes and Charicleia* is really the oldest extant *erotic* romance, has far excelled all his predecessors in everything that can render a story interesting or excellent, and his charming fiction obtained great popularity among such as could read. Some imagine that they see in Heliodorus a resemblance to the minutely descriptive style of novel introduced into England by Richardson; but without adopting this rather extreme notion, it can at least be safely asserted that Achilles Tatius and all the subsequent *Erotikoi* deliberately imitated his style and manner; and that he was used as a model by that formerly celebrated but dreadfully tedious school of heroic romance which flourished in France during the 17th c., and whose best remembered representative is Mademoiselle de Scudéri. Tasso, Guarini, D'Urfé, and several other modern writers, have drawn many particulars—sometimes almost *verbatim*—from the stories in the *Theagenes and Charicleia*. Achilles Tatius (q.v.), belonging probably to the 5th c., ranks next to, but at some distance from, Heliodorus in merit. His romance, *Tu kata Leukippen kai Kleitophonta*, consisting of eight books, has supplied incidents to more than one Italian and French writer.

The work next in time that invites our attention, *Daphnis and Chloe*, by Longus, is of totally different character. It is a simple and picturesque prose-pastoral, with no poisonings, murders, magic, supernaturalism, and impossible exploits. Over the whole story rest a rural peace and a smile of sunshine; and in spite of some singularly polluted passages, it was, for its time, a pure and wholesome fiction. *Daphnis and Chloe* is the only pastoral romance produced by any Byzantine author. Whether or not it exercised any influence on the development of the *modern* pastoral of Italy and France, cannot be proved; but it

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has been noticed that there is no slight resemblance between it and the story of the *Gentle Shepherd*, which we know was suggested to Allan Ramsay by a classical friend, who may have borrowed from the Greek the sketch which he gave to the poet. It has also been very closely imitated by Gessner in his idyl of *Daphnis*.

After Longus comes Chariton (lived some time between the 6th and 9th c.), whose romance, in eight books, on the *Loves of Chæreas and Callirrhœ*, is nearly complete. It contains, like the other erotic fictions, plenty of stirring and startling adventures, but on the whole less improbable than those in the writings of his predecessors. Of three Xenophons, also noted among the *Erotikoi*, and of uncertain date, the best is Xenophon of Ephesus, whose romance *Ephesiaca*, or the *Loves of Anthia and Abrocomas*, in ten books, has all the sensational characteristics of the school to which it belongs. It is noticeable that in the romance of Xenophon is found for the first time the story of the love-potion, the pretended death, and the mock entombment of the heroine, which forms the leading incident in Shakespeare's *Romeo and Juliet*, and which, it is thought, reached the great English dramatist at second or third hand, through the Italian novelist, Luigi da Porta.

Again, a long interval elapses before appears another love-fiction of the old pagan sort. During this period, however, a work was produced, essentially a romance, expressly aimed to recommend that form of Christian life favorite in early times—the ascetic and recluse form. This was the *Barlaam and Josaphat* (q. v.), the author of which is unknown, but whose popularity, during the middle ages, may be estimated from the fact that it was translated into every language of Christendom from Norway to Spain. In the 12th c., another erotic Eustathius or Eumathius, properly the last of the series, published *Ismene and Ismenias*, in 11 books—a feeble performance, the expiring flicker of a lamp whose oil is nearly gone. It is puerile in delineation of character, and full of plagiarisms; yet many of its details have been copied by later occidental writers, e.g., D'Urfé and Montemayor.

In all the erotic romances, the adventures, which constitute the story, have certain common characteristics. The hero and heroine are generally carried off by robbers or pirates; or they flee from home, and are accidentally separated. They resolve to seek each other throughout the world, and in the course of their loving quest they visit the remotest regions, encounter the most frightful perils, make hairbreadth escapes from tragic ends, meet again in most unexpected and miraculous ways, and generally close their career in happiness and splendid prosperity—often turning out to be the offspring of far greater people than they imagined. Copious use is made of poisons, love-potions, improbable tricks, magic instruments, etc.; and one can easily see that the stories were meant to tickle and stimulate a languid, corrupt, sensual, and credulous people, like the Greeks of the Lower Empire.

Before touching on the mediæval romance of western

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Europe, we may briefly notice such specimens of classical fiction as exist or are known to have existed in Latin. Sisenna, who translated the Milesian Tales into Latin, derived his knowledge of them from the Sybarites, a Greek colony of Lower Italy. The taste for similar stories increased during the empire, but the writers in general cannot have displayed much genius, if we may judge from the contemptuous language used by Emperor Severus against Clodius Albinus, whose fictions he designates *ludicra literaria*, and *anilia* (old wives' tales). But higher praise must be assigned to the work commonly attributed to Petronius Arbiter (q.v.), who lived in the time of Nero, and whose *Satyricon*—incomplete—is a comic novel or romance, and (though the dirtiest work in even pagan literature) is executed with skill, vigor, and at times with beauty. In the 2d c. after Christ, Appuleius (q.v.) wrote his *Ass* (called from its excellence the *Golden Ass*), which relates the adventures of a young man who had the misfortune to be accidentally metamorphosed into that animal, while sojourning in Thessaly, retaining, however, his human consciousness. The miseries which he suffers at the hands of robbers, eunuchs, magistrates and other persons into whose hands he falls, until the period when he is enabled to resume his former figure, are portrayed with a wit, humor, and fancy scarcely inferior to Lucian. The work is believed to have had also, like the writings of his Greek contemporary, a moral and satirical aim. It was immensely popular in the middle ages, supplied Boccaccio with some of his stories, and the author of *Gil Blas* with the picturesque incidents of the robbers' cave in the early part of *his* romance, and contains in the episode of *Cupid and Psyche* one of the loveliest allegories of classical antiquity.

2. *Romantic Fiction in Western Europe.*—The first thing to be clearly understood in connection with this branch of literature is, that it is *not* a continuation of the Græco-Byzantine or classical fiction, though, strangely, it began to spring up in the West when the other was dying out in the East. It is a completely new growth, product of new historical circumstances, which were but very slightly affected by Byzantine influences of any kind; and it transports us into a world of ideas, sentiments, beliefs, and actions as different from what we find in the *Erotikoi* as could be imagined. In the old fiction, the principal characters are mere lovers *forced* into adventures by the ministers of fate; in the later fiction, they are real heroes of the old Homeric type, and *seek* dangers greedily and joyously. When we read the *Erotikoi*, we are reminded in many ways that we are in the midst of a corrupt and decaying civilization; when we turn to the romances of chivalry, in spite of certain superficial and barbarous vices, such as the prevalence of bastardy and the indifference to bloodshed, we feel that we are in the presence of a youthful, healthy, vigorous, and growing social life. That these romances, generally from beginning to end, consist of a series of extraordinary and utterly impossible exploits, in which the magic, the mystery, and the enchantments of

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the *Arabian Nights* are rivalled or outshone, is unquestionable; but this proves no more than that the races of western Europe, who slowly, during the dark ages, were rising, by the help of the church, out of barbarism into feudalism—the first step toward the civilization of the modern world—were boundlessly ignorant, credulous, and wondering. Their prodigious vigor and vehemence of character, having no proper intellectual *pabulum*, was forced to supply its craving for a knowledge beyond its immediate attainment by the exaggerations of a fancy that knew neither law nor limit. It is going too far to assert that, in the mediæval romance, everything is of native or ‘Gothic’ origin; the fact is very much the reverse. This extreme theory, propounded by Mallet and supported by Bp. Percy and other writers, is inadequate to account for all that is contained in these romances. Not less inadequate is another theory, suggested first by Salmasius, afterward elaborated by Warton, that the mediæval romance is mainly of Saracenic origin, and was introduced probably by the Moorish conquerors into Spain, and thence propagated into France and Britain; while a third theory, which has found supporters, viz., that it was derived from the classical mythology of ancient Greece, is the most inadequate of all. The true explanation appears to be, that mediæval romance had its root and foundation in Chivalry (q.v.)—a genuine product of western Europe—and though the machinery, the exploits and the marvels, may have often been derived from the foreign sources mentioned, yet the spirit, scenery, sentiment, and life of the legends thoroughly reflect the characteristics of the earlier ages of feudalism. The notions of dragons, giants, magic rings, enchanted castles, are probably of Saracenic origin, and may have been introduced into Europe by the horde of pilgrims who visited the East in the time of the Crusades; such incidents as the detaining of a knight from his quest by the enchantments of a sorceress may have been a tradition of the *Odyssey* of Homer; but the gallantry, the courtesy, the romantic valor, the tournaments, the noble friendships of brother-knights—all that distinguishes the romances of chivalry, from Runic legends or the *Arabian Nights*, cannot be traced to any other source than the new-born chivalry of Europe.

The mediæval romances are divisible into three great series: 1. Those relating to Arthur and the Knights of the Round Table; 2. Those relating to Charlemagne and his Paladins; 3. Those relating to Amadis de Gaul and his descendants.

The Arthurian series is, in its essence, of Welsh and Armorican origin. Its genesis is as follows. First came the legendary chronicles composed in Wales or Brittany, such as the *De Excidio Britannie* of Gildas (q.v.); the chronicle of Nennius, belonging to the 9th c.; the Armorican collections of Walter Calenius or Gualtier, Archdeacon of Oxford; and the famous *Chronicon sive Historia Britonum* of Geoffrey of Monmouth (q.v.)—from these, and from the multitude of floating unrecorded traditions, sprang the

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metrical, which in turn gave birth to, and were ultimately superseded by, the *prose* romances. With the latter alone we have here to do. They, like the metrical romances, were composed in the 13th, 14th, and 15th c. by Anglo-Norman authors (whose names are unknown), who took all the more willingly to the old British legends, since in these the 'Saxons' were objects of the authors' hatred and detestation. The principal romances of the Arthurian cycle are those of *Merlin* (q.v.), the enchanter; of *Arthur* (q.v.); of the Sangreal (see GRAAL); of *Perceval*; of *Lancelot du Lac*; of the princes of Lyonesse, *Meliadus* and his son *Tristan*; and of *Isaie le Triste*, son of Tristan. They relate the marvellous adventures, exploits, loves, and gallantries of the Knights of the Round Table, and are probably in substance the oldest of the mediæval prose romances. The scenes are generally laid in Wales, Cornwall, Brittany, Ireland, or Scotland; only in one or two of the series are we taken as far as Egypt or India; and though Arthur is slain by 'Saracens' who supported his nephew, Mordred, and a general Eastern coloring is present in the cycle, yet it is 'Saxons' who are his principal foes.

The series of Charlemagne and his Paladins is of purely French origin, and originated in a somewhat similar fashion to the Arthurian cycle; i.e., there was first a legendary chronicle (in verse), *Historia de Vita Caroli Magni et Rolandi*, erroneously attributed to Turpin or Tilpin, Abp. of Rheims, contemporary of Charlemagne, but dating probably in the 11th or 12th c.; then came a series of metrical romances, strictly so called, gradually supplanted by their prose counterparts, the authors of which last, however, appear to have diverged more from the metrical originals and to have been more free and fanciful than their predecessors of the Arthurian cycle. The principal are *Huon of Bordeaux* (the incidents of which are followed by Wieland in *Oberon*), *Guerin de Monglave*, *Gaylen Rhetoré* (in which Charlemagne and his Paladins proceed *incognito* to the Holy Land), *Miles and Ames*, *Jourdain de Blaves*, *Doolin de Mayence*, *Ogier le Danois*, and *Maugis the Enchanter*. In these romances we are, in some respects, on different ground from that in the Arthurian series. We are transferred to the East—to Africa, Palestine, Arabia, Bagdad, Constantinople, India, Persia, the Caspian Sea, etc. We are introduced to the courts of Saracen 'princes,' 'sultans,' and 'emirs;' and see Mohammedan maidens of peerless beauty falling in love with Christian knights, and for their sakes abandoning even betraying, father, mother, brethren, and kinsmen. Fairies, who figure but slightly in the Arthurian romances, play a frequent and important part in these; demons, dervishes, apes, talismans, palaces with cupolas and gilded roofs, splendid jewels, diamonds, etc.—everything, in fact, shows the influence exercised on the imagination of western Europe by the glowing scenery, the brilliant life, and the gorgeously fanciful superstitions of oriental lands.

For the series relating to Amadis de Gaul and his descendants, see AMADIS. It is a proof of the comparative

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lateness of their composition, that the 'Saracens' of the French romances here give place to 'Turks;' and as the eyes of Europe were turned toward the tottering Greek empire, many of the scenes of warfare are laid at Constantinople.

Besides the three distinct series of romance above mentioned, a fourth may be noted, in which the heroes of antiquity are grotesquely tricked out in the costume of mediæval knights. The exact date of their composition cannot be ascertained, but in general they were probably later than any of the other three series; and, at any rate, were for the most part not published till the end of the 15th and the beginning of the 16th c. The principal are the romance of *Jason and Medea*, of *Hercules*, of *Ædipus*, and of *Alexander*. They are in French, and the first two profess to be the work of a Raoul le Febvre. An attempt is made to adhere, in the general outline of the stories, to the ancient myths, but most marvellous embellishments are added, such as only the middle ages could have conceived; while the transformations that the classical personages undergo are exceedingly ludicrous. Jove becomes a 'king;' Mercury, his 'squire;' the Fates, 'duennas;' Cerberus and the Sphinx, 'giants;' etc.

Though the romances of chivalry may appear utterly tedious and absurd to a modern reader, they were immensely relished and admired during the ages in which they were produced, were widely circulated, in different forms, throughout Christendom, and were highly popular with later poets. The influence which they exercised on Pulci, Boiardo, Tasso, Spenser, etc., shows the strong hold that they must have had on the imagination of Europe; but with the decline of chivalry, the spread of the more rational and artistic fictions of the Italian novelists, the revival of letters, and the general advancement in civilization, the taste for the romances of chivalry declined, until finally, early in the 17th c., Cervantes laughed them out of literature, and well-nigh out of memory.

3. *Development and Influence of Fiction in Italy.*—The Italians originated no romances of the kind described above. This resulted from various causes, principally perhaps the following: 1st, that they were really not a Gothic, but at least a semi-classic people; 2d, that they were by inheritance more polished in taste than the northern nations; 3d, that instead of feudal chivalric institutions, the most characteristic *political* features of Italy, during the middle ages, were mercantile and lettered republics. There was what may be roughly called a *middle class*—of merchants—in Italy, when England and France and Spain contained really little more than nobles and serfs; and these merchants were really the best instructed and the most enlightened portion of the community. Hence it is natural that we should find a style of fiction mirroring this more civilized and sober form of social life. That the classical romances had some influence on the development of Italian fiction, is probable; several of the tales recorded in the love-letters of Aristenetus, and in the

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Golden Ass of Appuleius, are quite like what we read in Boccaccio and others. The fables of Pilpai or Bidpai (q. v.), translated into Latin as early as the 13th c., also were not without effect; but it is to the Arabico-Indian book of the seven counselors (better known as *The Tales of the Seven Wise Masters*), still more to the stories of Petrus Alphonsus (whose work is entitled *De Clericale Disciplina*), and the *Gesta Romanorum* (q. v.), a grotesque jumble of classical stories, Arabian apologues, and monkish legends, in the disguise of romantic fiction; but most of all perhaps to the *Contes* and *Fabliaux* (q. v.) of the French poets, that we must look for the sources of those almost innumerable *novelletti* which mark the earlier literary history of Italy.

The earliest Italian work of this sort is the *Cento Novelle Antiche*, commonly called *Il Novellino*. It is a compilation by different hands—all unknown—of stories floating about, or taken with modifications from the sources above mentioned, with one or two of the more graceful episodes in the romances of chivalry, and was executed toward the close of the 13th c. It was followed 1358 by the *Decameron* of Boccaccio (q. v.)—the finest, in humor, sentiment, and style, of the whole set, but not more original in story than *Il Novellino*. The influence of the *Decameron* on early European literature was prodigious. Chaucer and Shakespeare in particular were greatly indebted to it for incidents and plots; while in France—from whose *Trouvères* Boccaccio himself had derived so much—he had a number of distinguished imitators. In his own country, his influence was so overwhelming that for centuries Italian novelists could do nothing more than attempt to copy him. The principal of these imitators are Franco Sacchetti (1335-1410), Ser Giovanni (who began to write his *novelletti* 1378, from which Molière got the plot of *École des Femmes*, and Shakespeare probably part of his story of the *Merchant of Venice*—though the story of the bond is far older, and is of Persian origin: Chaucer also is indebted to this Italian); Massuccio di Salerno (about 1470), more original than most of the post Boccaccian novelists; Sabadino delli Arienti (about 1483); Agnolo Firenzuolo; Luigi da Porta; Molza, and Giovanni Brevio (at the close of the 15th, and in the first half of the 16th c.); Girolamo Parabosco (1550); Marco Cademoste da Lodi (1544); and Giovanni Giralaldi Cinthio (d. 1573), noted particularly for extravagant employment of sanguinary incidents, and introduction of scenes of incredible atrocity and accumulated horrors. The seventh of his third decade of stories contains the story of *Othello, the Moor of Venice*: the plot of *Measure for Measure* also was derived indirectly from him. Cinthio was, in fact, the greatest favorite of all the Italian novelists with the Elizabethan dramatists. Besides these, were Antonio Francesco Grazzini (d. 1583); Straparolo (wrote 1554 *et seq.*), from whom Molière, also the French writers of fairy tales, derived numerous hints; while the ludicrous incident embodied in the Scottish song of *The barrin' o' our door*, forms one of the stories of this writer; Bandello (d. 1555), the

most widely known and read (out of Italy) of all the Italian novelists after Boccaccio, and in whom we find the original of Massinger's play of *The Picture*, and of Shakespeare's *Twelfth Night*; Granucci (pub. 1574); Malespini (pub. 1609); and Campeggi (early part of 17th c.).—The best French imitations of these Italian tales are *Cent Nouvelles Nouvelles* (printed 1456, transl. into English under the title *Hundreth Mery Tayles*, 1557), full of life, gayety, and imagination; and the *Heptameron* of Margaret, Queen of Navarre, from which Shirley, the English dramatist, took the plots of two of his comedies.

A few words in passing may be given to a very different class of fiction—the *Spiritual Romance*. It originated, without doubt, in the bosom of the church, and from the desire to edify, by stories of religious knight-errantry, a rude and ignorant community, incapable of receiving or relishing abstract doctrines. The first of the series is *Barlaam and Josaphat*, above alluded to; but by far the greatest work of the kind during the middle ages is the *Legenda Aurea*, or Golden Legend (q.v.)—itself believed to be drawn from different and now partly forgotten sources. Besides these, a species of spiritual tale—the *Contes Dévots*, was prevalent in France during the 12th and 13th c., written by monks, perhaps to counteract, perhaps in part to compete with, the witty and licentious stories of the Trouvères; but strangely, in these pious fictions the lives of monks and nuns are represented as far more immoral than in the fictions of the secular satirists. The things, too, which the Virgin Mary is represented as doing are most astounding, and throw a strange but valuable light upon the religious notions of the age. In one story, she conceals the shame of a favorite nun; in another, she performs the part of a procuress; in a third, she officiates as midwife to an abbess who had been frail and imprudent; and in general, she performs the most degrading offices for the most worthless characters.

Romance of the 16th and 17th Centuries.—During the middle ages, the universal sway of the church and the institutions of feudalism gave a certain uniformity to the modes of life, and thereby to the social literature of w. Europe; but after the epoch of the Reformation, and even earlier, this uniformity disappears, and we find in every direction a tendency to the opposite extreme of individualism. This tendency manifests itself especially in the fiction of the period, which vastly increasing in quantity and varying in quality, becomes difficult to classify; but the endeavor is here made to group the products of modern prose-fiction works under what appears convenient chronological heading.

During the 16th and 17th centuries, four different kinds of romance or novel were cultivated—1. *The Comic Romance*; 2. *The Political Romance*; 3. *The Pastoral Romance*; 4. *The Heroic Romance*

Comic Romance substantially begins in modern times with Rabelais (q.v.), styled by Sir William Temple the *Father of Ridicule*. Others, indeed, had preceded him in the

same path, but they had acquired no celebrity. In him we see unmistakably one form of the modern spirit—its daring freedom of speculation, criticism, and satire, also that lack of reverence exhibited by those who, at the period of the Reformation, clearly discerned the abuses of the church, but had not faith in the possibility or efficacy of reforms. Thus, Rabelais, in his inimitable burlesque romance, scoffs—with the tone of a skeptic, however—at the vices of the clergy, the crooked ways of politicians, the jargon of philosophers, and the absurdities of the *contes dévots* and of the mediæval tales generally. The next remarkable romance of a comic nature is the *Vita di Bertoldo* of Julio Cesare Croce (at the close of the 16th c.), a work recounting the humorous and successful exploits of a clever but ugly peasant; and regarding which we are told that for two centuries it was as popular in Italy as *Robinson Crusoe* or the *Pilgrim's Progress* in England. The substance of the story can be traced back to an oriental source. A few years later appeared *Don Quixote* (see CERVANTES), in which 'war to the knife' was opened against the romances of chivalry, and in which, perhaps, we see, more distinctly than in any other fiction of the period, the new turn that the mind of western Europe had taken. Almost contemporaneous with *Don Quixote* was another Spanish romance—Matteo Aleman's *Life of Guzman Alfarache*, successively beggar, swindler, pander, student, and galley-slave. In this work, as in others of the same sort, we find several indications of the influence of the Italian novelists. It has been supposed that *Guzman Alfarache* suggested to Le Sage the idea of *Gil Blas*, and there is some resemblance between the two; but, at any rate, it gave birth to a host of Spanish romances with beggars and scamps for heroes, of which the best is the *Lazarillo de Tormes*, by Diego de Mendoza (1586). In the following century, France produced, among others, Scarron's *Roman Comique*, and Furetiere's *Roman Bourgeois*. England and Germany have nothing to show in this department.

Political Romance was manifestly suggested partly by the great politico-ecclesiastical changes in Europe in the first half of the 16th c., partly by the immense increase in the knowledge of the manners and customs of remote nations, occasioned by geographical discoveries and mercantile adventure. The earliest of the series is the *Utopia* of Sir Thomas More; next comes the *Argenis* of Barclay, pub. 1621; and to the same class belong a variety of French romances produced about the close of the 17th and the beginning of the 18th c., of which by far the most famous is the *Télémaque* of Fénelon.

Pastoral Romance.—All through the middle ages, the fame of Virgil kept up a certain interest in compositions aiming to delineate rustic or shepherd life. We find in even the poems of the Troubadours several specimens of the erotic pastoral; and the *Ameto* of Boccaccio furnishes a prose illustration of the same. But it was after the revival of letters that this branch of fiction, so essentially classical,

was most assiduously cultivated by men of scholarly genius; and though their works have not retained their original popularity, they are still interesting and valuable from a historical point of view, and abound in descriptive passages of great beauty and sweetness. The pastoral life which they portray, however, never existed either in Greece or elsewhere. Their shepherds and shepherdesses are as unreal and unhistorical beings as the knights of mediæval romance. The first important work of the kind is the *Arcadia* of Sannazzaro, in Italian, about the end of the 15th c. It was followed by the *Diana* of Montemayor, in Spanish, about the middle of the 16th c., several of the episodes of which are borrowed from the Italian novelists; while Shakespeare also has directly taken from it the plot of the *Two Gentlemen of Verona*, copying occasionally the very language, as well as some of the most amusing incidents in his *Midsummer Night's Dream*. The *Diana* was imitated in French by Honore d'Urfé, whose *Astrée* (1610-25) was long held in the highest esteem, and is really, in spite of its tediousness, a work of great learning and considerable merit. Twenty years before the appearance of *Astrée*, Sir Philip Sidney wrote and published his *Arcadia*, as tiresome, and in its substance as unreal, as any production of the same school, but in stateliness and melody of language, in luxury of fancy, in nobility and purity of sentiment, far exceeding them all.

Heroic Romance owed its origin partly to the immediate antecedent pastoral romance, partly to an increased acquaintance with classic history, produced by the translation of such books as *Plutarch's Lives*; and partly to the interest excited in the Moors of Granada by a splendid romance in Spanish (professing, however, to be a *history*), entitled *The Dissensions of the Zegrís and the Abencerrages*, printed at Alcalá 1604, and which soon became extremely popular, especially in France. It was in the latter country alone that the *Romans de Longue Haleine* (Long-winded Romances), as they have been happily nicknamed, were cultivated. The first of this heavy series was the *Polexandre* of Gomberville, pub 1632, in which the influence of the early Greek romances is visible. His successor, Calprenède, the best of a bad lot, wrote *Cleopatra*, *Cassandra*, and *Pharamond*. But the most prolific, and consequently the most intolerable of the school, is Madame de Scudéri, whose principal romances are *Ibrahim ou l'Illustre Bassa*, *Clelie*, *Histoire Romaine*, *Artamenes ou le Grand Cyrus*, and *Almahide*. The pompous dignity, the hyper-polite address, the dreadful dullness, and the hollow ceremonialism of these ridiculous performances, admirably though unintentionally mirror the features of French court-life during the time of the *Grand Monarque*. The heroic romances did not long retain their meretricious reputation. Molière, and still more, Boileau in his satire *Les Héros de Roman*, *Dialogue*, ridiculed them to death, and consequently, Madame de Scudéri had no successor.

NOVELS AND ROMANCES OF THE 18TH CENTURY.—The two European nations that most brilliantly distinguished

themselves in the department of fiction during this century were England and France, to which chiefly this notice is confined.

1. *English Prose Fiction*.—During the age of Elizabeth and her immediate successors, the imaginative genius of England, from various causes, had taken an almost exclusively poetical direction; and with the exception of Sidney's pastoral of *Arcadia*, and Bunyan's *Pilgrim's Progress*, we meet with nothing in the shape of a novel or a romance for a hundred years. The 17th c. has nothing of the kind to show till it approaches its close. This is doubtless due, in part at least, to the intensity of the great political and religious struggle that agitated and rent England during the first half of that century, and gave an austere theological bias to society.* The Puritans, in their day of triumph, would not tolerate either comic or heroic romances. They set their faces 'like flint' against all imaginative fiction, which they considered as little better than lying; and even till the second quarter of the 19th c., many of that class of people commonly described as 'the religious portion of the community,' in some sense the representatives of the Puritans, betrayed the legitimacy of their spiritual descent by their aversion to all sorts of secular tales. After the Restoration, however, an extraordinary change came over the English nation, or at least over the higher and wealthier classes. These rioted in the excess of a coarse and licentious reaction against the rigorous and sometimes fanatical piety of the Commonwealth. This turbid viciousness by and by calmed down, but it left a certain taint of sensualism and materialism in the habits and life of the people generally, which, in the opinion of some competent critics, marks them to this day. It is certain that at the beginning of the 18th c. England was entering on the most prosaic, unimaginative, and unheroic period of her history. Its characteristics are faithfully reflected in most of her novels, which, as pictures of the gross dull life, the paltry thoughts, the low sentiments, the modish manners, and the loose morality that prevailed, possess a great historical value apart altogether from their literary merits. The first name that occurs is that of the notorious *Aphra Behn* (q.v.), the greater number of whose novels, of which *Oronoko* is best known, appeared toward the close of the reign of Charles II., but are included here in the literature of the 18th c., as they belong by the nature of their contents to it, and not to the 17th c. types of fiction. She was imitated by Mrs. Heywood (1696–1758), of whose *Love in Excess*, *The British Recluse*, and *The Injured Husband*, it has been remarked, that 'the male characters are in the highest degree licentious, and the females as impassioned as the Saracen princesses in the Spanish romances of chivalry.' A later work, however, *The History of Miss Betsy Thoughtless*, is of higher stamp, and is supposed to have suggested the plan of Miss Burney's *Evelina*. But the first novelist of great genius belonging to the new era is Daniel De Foe (q.v.), father of modern English prose fiction, in whose writings—*The Ad-*

ventures of Captain Singleton. *The Fortunes of Moll Flanders*, *The History of Colonel Jack*, etc.—the coarse, homely, unpoetical, but vigorous *realism* of the time is strikingly apparent. Perhaps the Spanish ragamuffin romances may have furnished him some hints. *Robinson Crusoe* is the finest and the most famous of all that class of fiction which was extensively cultivated both in France and in England during the earlier part of the 18th c., and which received, in the former country, the name *Voyages Imaginaires*. To the same class (outwardly at least) belong Swift's *Gulliver's Travels*, though at bottom this is a satirical romance, like the works of Rabelais; and the *Gaudenzio di Lucca*, a sort of politico-geographical fiction, generally attributed to Bp. Berkeley. After De Foe comes Richardson (q.v.), very unlike any of the novelists of his age—to appearance! His Muse is a most decorous prude, and never utters anything rude, or vulgar, or licentious; but though she was inspired with the best intentions, her notions of how virtue should be rewarded indicate the coarseness of the time, hardly less than the debaucheries and seductions of Fielding and Smollett. The principal novels of Richardson are, *Pamela*, *Sir Charles Grandison*, and *Clarissa Harlowe*. Fielding (q.v.) thought Richardson untrue to nature, and wrote his first novel of *Joseph Andrews* as a burlesque on the style of his predecessor. Like his subsequent performances, *Tom Jones* and *Amelia*, it represents society as Fielding's sharper eyes saw it, on the whole, gross, vulgar, and impure. Smollett (q.v.), with a different style of genius, continues to paint in the same spirit. His chief works are, *Roderick Random*, *Peregrine Pickle*, *The Adventures of Ferdinand Count Fathom*, and *Humphry Clinker*. Sterne (q.v.), belonging to the same period, exhibits a genius so whimsical, peculiar, and original, that it is almost impossible to class him with any of his contemporaries. His *Tristram Shandy* is a work *sui generis*, but nowhere is the coarse impurity and indelicacy of the age more conspicuous. Four years later appeared Goldsmith's *Vicar of Wakefield*, in which a change for the better, in a moral view, is first noticeable. With the exception of Richardson all the novelists above mentioned are usually, and correctly, described as *humorists*. Other qualities they have besides, but humor is the most common and predominant. When this school was passing away about 1760-70, another was on the eve of being born. The publication of Percy's *Reliques* had re-awakened an interest in the age of chivalry and romance. Readers had become tired of the long prevalence of prosaic fiction, in spite of the splendid genius devoted to its illustration. It had done its work, and could create no more. The first of the modern romantic school was Horace Walpole, whose *Castle of Otranto* appeared 1769. He was followed by Clara Reeve, authoress of the *Old English Baron*, a romance that we might wish every school-boy to remember with gratitude; but the greatest genius in this line was undoubtedly Mrs. Radcliffe (q.v.), whose *Mysteries of Udolpho* and other works, though now almost forgotten, were once greedily devoured

and abundantly imitated. The ablest of her successors were Matthew Gregory Lewis, author of *The Monk* (1796), and Maturin, author of *Montorio* (1803). In all the romances of this school, the incidents are of the most startling, terrible, and often supernatural character, and the scenery is in keeping with the incidents. Fierce barons, mysterious bandits, persecuted maidens, gloomy castles, secret passages, deep forests, murders, ghosts, haunted chambers, etc.; everything that could charm, by way of contrast, and pleasantly horrify the languid, matter-of-fact, skeptical 18th c., is found in their exaggerated pages.

A few novelists remain to be mentioned who are incapable of particular classification. These are Dr. John Moore (q.v.), author of *Zeluco*, etc.; Godwin (q.v.), author of *Caleb Williams*, *St. Leon*, etc., in whom the free-thinking and revolutionary spirit that seized many minds after 1789 is conspicuous; Mrs. Inchbald (*Nature and Art*, *A Simple Story*, etc.); Charlotte Smith (*Old Manor House*, etc.); Miss Austen (*Pride and Prejudice*, *Emma*, *Persuasion*); and Maria Edgeworth, whose sketches of Irish character first suggested to Walter Scott the idea of attempting for Scotland a series of like illustrations.

2. *French Prose Fiction in the 18th Century*.—It is not easy—perhaps not possible—to trace the causes that led to the cultivation of the different kinds of fiction which flourished in France during this century, particularly during the first half of it. The natural love of change—of novelty; the accidental influences of foreign literature; the disposition, so peculiarly French, to satirize prevalent follies and vices; the wish, on the other hand, to amuse the leisure moments of a luxurious, superstitious, and profligate society: all these and many other causes unquestionably assisted in determining its diverse development. Four kinds have been distinguished: 1. *Pseudo-historical Romance*, the literature in which department, though copious enough, neither deserves nor requires special notice; 2. *Romance in which the incidents, though natural, are purely imaginary*; 3. *Satirico-moral Romance*; 4. *Fairy Tales*, to which may be associated the imitations of *Oriental Tales*, and the *Voyages Imaginaires*.—We give attention to the last three kinds.

2. *Romance in which the incidents, though natural, are purely imaginary*.—This class more nearly corresponds with the modern conception of the novel than any of its predecessors, and probably had its prototype in *La Princesse de Clèves* and *Zaïde*, by the Comtesse de Lafayette, in the latter half of the 17th c.; but the first great name that adorns it is that of Marivaux (1688–1763), whose *Vie de Mariamne* and *Paysan Parvenu* were long in high favor. They have this in common with the contemporary English fiction, that everything in them is produced by ordinary means, and the interest of the reader is sought to be awakened by the vivid and powerful portraiture of natural feelings, while the incidents, though often highly romantic, are always sufficiently probable to insure the credence of the imagination. Next to Marivaux comes the Abbé

Prevot, q.v. (1697–1763), who first ‘carried the terrors of tragedy into the novel.’ He was a most voluminous writer; but the work by which chiefly he is now remembered is *Manon L’Escout*, recounting the adventures of a kept-mistress and swindler, the purpose of which appears to be similar to that of *La Dame aux Camelias* of Dumas fils—viz., to show how noble, true-hearted, and self-sacrificing a prostitute may be! Other writers belonging more or less strictly to the same division are Madame Riccoboni (1750) and Rousseau (q.v.), in whose *Héloïse* we see the dawn of that fierce natural impure passion, and that extravagant scorn of conventional life, that culminated in the sanguinary paroxysms of the Revolution.

3. *Humorous and Satirical Romance*.—By far the most celebrated specimens of this kind of fiction in France during the 18th c. are the *Gil Blas*, *Diable Boiteux*, and *Le Bachelier de Salamanque* of Le Sage, q.v. (1668–1746), all of which were suggested by the prolific comic romancists of Spain, Juan de Luna, Quevedo, Cervantes, Espinel, from some of whom, as well as from more ancient sources he borrowed, with hardly any variation, whole scenes and stories. The best parts, however, are his own, and the spirit of the work is thoroughly French in the gay and lightsome vivacity of its humor. It is with some hesitation that we place the younger Crébillon (q.v.) in the same category; for the licentiousness of his *Egarements du Cœur et de l’Esprit*, and other novels, is far more apparent than their satire or humor. Bastide and Diderot (q.v.) hold an equally doubtful position as satirists or humorists; but Voltaire (q.v.) may fairly claim to rank among the former, in virtue of his *Candide*, *Zadig*, *L’Ingénu*, *La Princesse de Babylone*, etc., most of which contain covert attacks on superstition and despotism, under the forms in which Voltaire best knew them. Voltaire, however, had not a rich imagination, and, in consequence, has been obliged to help himself liberally in the matter of incident from older writers.

Fairy Tales, etc.—A very careful inquiry might probably succeed in tracing back this kind of literature to the early intercourse of Christian and Moorish nations; but the first work in which we find definite examples of fairy tales is the *Nights* of the Italian novelist Straparola, translated into French 1585. In this collection are found at least the outlines of some of the best-known stories of the sort, such as *Le Chat Botté* (Puss in Boots), *Prince Marcassin*, *Blanchebelle* and *Fortunatus*. The immediate forerunner and prototype, however, of the French fairy tales was the *Pentamerone* of Signor Basile, written in the Neapolitan *patois*, pub. 1672. This work attracted and stimulated the fancy of M. Charles Perrault (q.v.), whose *Histoires ou Contes du Temps passé* appeared 1697, and is incomparably the most naïve and charming of all the collections of fairy tales. The titles of some of his *contes* will recall to some readers many a literary feast of childhood—*La Barbe Bleue* (Bluebeard), *La Belle au Bois Dormant* (The Sleeping Beauty, to which, by the by, Tennyson has given a poetic

immortality), *Le Chat Botté* (Puss in Boots), *Riquet à la Houppé* (Riquet with the Tuft), and *Le Petit Chaperon Rouge* (Little Red Riding Hood). The principal successors of Perrault were the Comtesse d'Aunoy (see AUNOY), Madame Murat, and Mademoiselle de la Force; but their stories are much more extravagant and forced than those of the illustrious academician. The same censure, however, is not applicable to *Les Contes Marins* (1740), by Madame Villeneuve, among which occurs the tale *La Belle et la Bête* (Beauty and the Beast), perhaps the most beautiful creation in the whole circle of this fantastic form of fiction.

Meanwhile, the translation of the *Arabian Nights' Entertainments* (q.v.) by Galland, 1704-17, and of numerous other Arabic and Persian works, the great encouragement extended to the literature of the East in the 17th and 18th c., the publication of the *Bibliothèque Orientale* of D'Herbelot, etc., created a taste for the brilliant exaggerations of oriental fiction, and a variety of works were soon in the field, swarming with necromancers, dervishes, caliphs, bashaws, viziers, cadis, eunuchs, slaves. The most notable are—*Les Mille et un Quart d'Heure*, *Contes Tartares*; *Les Contes Chinois, ou les Aventures Merveilleuses du Mandarin Fum-hoan*; and *Les Sultanes de Guzaratte, Contes Mongols*, of M. Guenlette.—Of the class of fictions known as *Voyages Imaginaires*, the principal are the *Histoire Comique des Estats et Empires de la Lune*, and the *Estats et Empires du Soleil* of Cyrano Bergerac, which materially influenced the genius of Swift, who has, in fact, borrowed not a little from the first of these in his *Gulliver's Travels*, and which were themselves suggested partly by the Spanish romance of Dominico Gonzales, *The Man in the Moon*. Such novels as *Paul et Virginie* of Bernardin St. Pierre, which appeared toward the end of the 18th c., do not come under any of the four heads, but may most conveniently be mentioned here.

Prose Fiction of Germany during the 18th and 19th Centuries.—The necessary brevity which admits only a superficial indication of the development of this branch of literature in Germany, is the less to be regretted, as, during the greater part of the 18th c., this branch did not attain much distinction. Toward the close of the century, however, writers became more numerous, and as the literary activity of many of them continued till the first or second quarter of the 19th c., it is most convenient and natural to treat both centuries together, as they, properly speaking, form only one era in the literary history of that nation.

The first eminent German novelist of this period was Wieland (q.v.), whose Greek romances, *Agathon*, *Aristippus*, *Socrates*, etc., are of that didactic and skeptical character which was beginning to mark the reflective genius of the continent, and which has since produced such immense changes in all departments of thought. Wieland was followed by a crowd of writers, in whose productions is more or less apparent the influence of the English novel-

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ists, particularly Richardson and Fielding, who had been translated and carefully studied in Germany, where, however, the 'novel of manners,' whether serious or comic, dealt more largely in the representation of 'family life.' The principal names are August la Fontaine, Wetzel, Müller (whose *Siegfried von Lindenberg* is still remembered and read), Schulz, and Hippel. Almost contemporary with these quiet and somewhat prosaic novelists, there flourished for a brief period (1780-1800) a school of entirely opposite character, whose works, fiercely and outrageously romantic, had their poetic counterpart in Schiller's *Robbers*. They resemble, in their style of dealing with the feudal ages, the English romances of Mrs. Radcliffe and others, which probably suggested them. The chief writers of this 'turbulent school of fiction' as it has been called, are Cramer, Spiers, Schlenkert, and Veit Weber.

Alone, and far above all others in redundancy and originality of fancy, humor, and pathos, towers Jean Paul Richter (q.v.), whose work disdains classification, and to whom, therefore, his countrymen have affixed the epithet of *Der Einzige* (The Unique). Apart from all schools—in this respect, but in this only, like Richter—stands Johann Wolfgang Goethe (q.v.), whose novels, as well as his poems, are poetico-philosophic efforts to represent, perhaps to solve, the great facts and deep problems of human life and destiny.

The reaction from the materialism and irreligious levity of French thought, showed itself in Germany toward the close of the 18th c., first in a certain earnest love and study of the old, simple, superstitious, and poetical beliefs of the middle ages. Hence originated the exquisite class of fictions called *Volksmärchen* (popular legends or tales), in which the Germans have never been equalled. The most illustrious cultivator of this species of fiction is Ludwig Tieck (q.v.), for Musæus (q.v.), though gifted with admirable powers of narration, is marked by a skeptical humor and irony, not altogether compatible with an imaginative conception of his subject. Other distinguished names are those of De la Motte Fouqué (q.v.), Chamisso (q.v.), Heinrich Steffens, Achim von Arnim (q.v.), Clemens Brentano (q.v.), Zschokke, and Hoffmann (q.v.). More recent novelists of note are Auerbach, Freytag, and Paul Heyse. The tales of Fritz Reuter, in the *Platt* or Low German, are original and delightful.

NOVELS AND ROMANCES OF THE 19TH CENTURY.—These have been produced in such overwhelming quantity, that volumes would be required merely to classify and characterize them. The vast and rapid increase in the material facilities of intercourse among European nations, during the last half of the 19th c., has, among other results, tended to diffuse through each country the literary products of all the others, especially those of an entertaining kind; and these have in turn more or less stimulated the imagination of native genius, so that at present there is hardly a people in Europe, not even excluding Turkey, which has not contributed something to the enormous

stock of fiction belonging to this period. It would be altogether out of the question to attempt here a notice, however brief, of the principal novels and romances of every European nation; we can only refer to the historical surveys of literature, under such titles as BELGIUM: BOHEMIA: HUNGARY: NETHERLANDS: NORWAY: POLAND: SWEDEN: TURKEY, etc., and to individual biographies of eminent continental novelists. Even in regard to England and France, we can do little more than catalogue a few prominent names—leaving novelists of the United States for some separate consideration.

1. *English Fiction*.—Almost the first novelist that we encounter in the 19th c., Sir Walter Scott (q.v.) is probably the greatest that England has ever seen, and certainly among the greatest of any country. Here, however, we have less to do with his personal rank in literature than with the kind of fiction that he cultivated. In a qualified sense, he may be regarded as a continuation of the romantic school; but it must be observed that he is free from all their monstrosities, spasms, tricks, and horrible machinery. Possessed at once of far greater antiquarian learning, imaginative genius, sound sense, and instinctive taste, than any of his 'romantic' predecessors, he knew precisely what to shun and what to choose; and though his *Feudal Age*, as depicted in *Ivanhoe*, *The Fair Maid of Perth*, etc. is a considerably idealized portrait of the rugged facts, it is a portrait, and not like Horace Walpole's and Mrs Radcliffe's performances, a wild caricature. The political reaction in Britain, after the sanguinary excesses of the French Revolution, assuming the form of a new and passionate attachment to venerable and time-honored traditions, showed itself in literature too, and Sir Walter Scott was its grandest representative. He strove to delineate the Past, as it seemed in the eyes of men who were dubious of the Present, and afraid of the Future—noble, stately, glittering, and gay, with the pulse of life ever beating to heroic measures. The overpowering genius of Scott necessarily but unhappily (for the comfort of readers) led to 'endless imitation,' but the only one of his followers that held for a time a tolerably decent position in literature is G. P. R. James (q.v.). Galt (q.v.) and Wilson (q.v.), the former with vulgar but racy humor, the latter with highly sentimental and overdone pathos, portrayed aspects of Scottish life which the author of *Waverley* passed over. Other novelists, such as Lockhart (q.v.), Miss Ferrier (q.v.), and Mrs Johnstone, do not call for special notice; neither does Hope (q.v.), though his *Memoirs of Anastasius* is a most brilliant and powerful book; nor Moore (q.v.), though his *Epicurean* has all the sparkling and superficial splendors of his verse. After Scott, the next novelist who distinctly marks a new stage in the development of fiction is Sir Edward Bulwer Lytton (q.v.), in whose earlier works at least is seen something like a reflection of the cold, sneering, selfish, and sensual spirit that marked the higher classes during the period of the Regency; but the versatile genius of this author, and the different fields in which he

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won renown, would make it quite unfair to define him as a merely 'fashionable' novelist, though his first and least meritorious distinctions were acquired in that capacity, and students of *Sartor Resartus* are apt so to remember him. Of fashionable novelists, strictly so called, the best known are Mrs. Gore (q.v.) and Theodore Hook (q.v.). This class was succeeded by another far worse than itself—the *Newgate novelists*, as they have been well termed, who sought for their heroes among highwaymen, thieves, desperadoes, and murderers, like Jack Sheppard, Blueskin, Dick Turpin, Claude Duval, etc., and, flagitiously indifferent alike to fact and morality, labored with pernicious success to invest the lives of these scoundrels with a halo of romantic interest and dignity. The chief of this school, 'by merit raised to that bad eminence,' is William Harrison Ainsworth (q.v.). During the last 40 years, novels have been multiplied to a degree almost alarming, and literally incalculable. The greatest names are unquestionably Dickens (q.v.), Thackeray (q.v.), and Miss Evans (q.v.); but besides these might be mentioned a host of others, who have attained either celebrity or popularity, or both. Every mode of life, and every kind of opinion, social, artistic, scientific, philosophical, and religious, has sought to recommend itself by adopting this fascinating garb. We have the nautical novels of Marryat (q.v.), redolent like Dibdin's songs, of the briny deep; the political novels of Disraeli (q.v.); the sporting and military novels of Lever (q.v.); the brilliant 'muscular Christian' novels of Kingsley (q.v.); the 'governess-novels,' as they have been aptly denominated, of Miss Brontë (q.v.); the 'school' novels of Hughes and Farrar; and the 'sensational' novels of Wilkie Collins, Miss Braddon, and others. Other authors not less eminent, but not so easily classified are Mrs. Gaskell, Mrs. Norton, Miss Mulock (Mrs. Craik), Mrs. Oliphant (q.v.), Charles Reade (q.v.), Anthony Trollope (q.v.), George MacDonald (q.v.), Meredith, Whyte-Melville, M'Carthy, Blackmore, 'Ouida,' are well known; and William Black and Thomas Hardy have shown themselves artists of high class. (See most of the above titles.) The extraordinary increase of this potent and therefore perilous branch of literature cannot fail to excite reflection in thoughtful minds.

2. *French Fiction during the 19th Century.*--A few words are all that we can devote to this part of our subject, though it is far from uninteresting in either a literary or a moral view. The effect of the Revolution of 1789 on literature was not immediately beneficial, but the reverse, though it planted the germs of a multitude of new thoughts and aspirations in the mind of Christendom, which have since yielded, in France and elsewhere, a prolific harvest of wheat and—tares. The iron despotism of Napoleon crushed nearly all literary expression whatever. His hatred of 'idealologies' is well known, but the novel was that species of idealogic composition that came least into collision with the principles of imperialism. Even it, however, could hardly be said to flourish; and the only gifted writer of fiction who figures during the First Em-

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pire is Le Brun; and he was reduced to the necessity of caricaturing the *bourgeoisie*, to which Napoleon had no particular objection, as they were not his warmest admirers. Chateaubriand (q.v.) and Madame de Staël (q.v.) are insignificant in this department, and Charles Nodier, though voluminous, was not an original novelist. After the return of the Bourbons, especially after the revolution of 1830, France began to display a wonderful literary activity; and in particular, its long-repressed faculty of imagination burst into a sudden blossom of poetry and fiction. Even Napoleon, being dead, received a peculiar homage from the class to whom he had never shown favor or regard, of which the songs of Béranger and *Les Misérables* of Victor Hugo afford specimens. Unhappily for the purity of its literature, the *régime* of the Restoration, which followed the deliverance of France from a military despotism, was itself a base, corrupt, and profligate thing. The Bourbons came back only to re-enact the follies of their ancestors in the previous century, and the nation soon came to despise, detest, and disbelieve them, and the church which supported them. Hence, a certain reckless levity, and hollow mocking laughter, as of heartless skepticism, pervading those fictions which profess to delineate the realities of current life. Moreover, the sparkling wit, the sunny humor, the pathos, often exquisitely tender and refined, the delicate or deep delineation of character, the occasional fine flush of sentimental enthusiasm, and the poetic witchery of a religious mysticism, cannot blind us to the fact that the substance of most of the recent French fictions is incurably immoral. Paul de Kock (q.v.), Balzac (q.v.), Dumas (q.v.), father and son, Sue (q.v.), Dudevant (q.v.) Daudet (q.v.) Zola (q.v.), though wholly dissimilar in the quality of their genius, are in this respect too woefully alike. Victor Hugo (q.v.) and Lamartine (q.v.) are indeed morally far above the rest of their contemporaries, but they are perhaps the only great exceptions that can be mentioned. The 'Second Empire' did not improve the tone of the French novel, any more than it improved the tone of French society; but if it be true that when things have reached their worst they begin to mend, the country that has produced *La Dame aux Camélias* is perhaps, as regards the literature of fiction, in a hopeful condition. The Erckmann-Chatrian tales graphic delineations of provincial life, are honorably distinguished by absence of indecency. Verne's tales of impossible semi-scientific voyages to the moon and elsewhere are unique. See Dunlop's *History of Fiction* (1814; new ed. 1882), Masson's *Sketch* (1859), and Wolff's *Allg. Gesch. des Romans*.

NOVELS AND ROMANCES IN THE UNITED STATES.—In America, fiction may be said to have begun with the remarkable Indian stories and sea tales of James Fenimore Cooper. Here was in fact a starting point for American fictitious literature, drawing no nourishment from that of any other people, nor any element whatever, except that of style, from any preceding writer. But though this

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author and his works had a marked and wide effect on American literature, it never resulted in the production of another work of equal or even approximate excellence in the same direction. The character of American fiction began to veer in different directions, and the grotesque writings of Hoffman and Edgar A. Poe were seen strangely contrasted with the novels of Catherine M. Sedgwick, Maria J. McIntosh and Mrs. Ann S. Stephens. In fact, women have in America held a high position in fiction, and the *Uncle Tom's Cabin* of Mrs. Harriet Beecher Stowe was a veritable revelation in regard to the social condition which it depicted, while it was a whirlwind of power in the vast influence which it exercised on the generation in which it appeared. Mrs. Mowatt, Mrs. Southworth, and the author of *The Wide, Wide World* are additional names to illustrate the importance of woman in American fiction. But many admirable and popular authors in this branch of literature devoted themselves to short stories and sketches, a peculiar feature in American fiction, and gained well-deserved reputation. Such were Louisa May Alcott, Harriet Prescott Spofford, Elizabeth Stuart Phelps, and Helen Fiske (Hunt) Jackson ('H. H.'), in certain respects more influential than any other woman writer of her time. Her novel, *Ramona*, is a masterpiece of that class of fiction whose motive consists in the depicting of great national and social crimes.

In considering American fiction, it is to be particularly remembered that, more than that of any other country, it has been perforce in its specific qualities drawn from exotic sources. The ordinary society novel of the day has obtained its character chiefly from English writers, though in its lower strata it has depended on translations from the worst of the modern school of French novelists. The consequence has been that thoughtful writers have sought for a totally different line of authorship in which to exercise their abilities; therefore the 'short story' in its chief excellence as a work of art and a study of nature may be considered the most important indigenous product in American fiction. This is well recognized abroad, and the short stories of Bret Harte, Fitzjames O'Brien, Frank Stockton, John Habberton, and W. D. Howells have been characterized as the perfection of this class of writing. But the name of short-story writers is legion. Every magazine and newspaper in the country of any importance is flooded with offerings from this class of writers, many being of a high degree of excellence, and some achieving a reputation causing them to be remembered and mentioned during an entire generation. But by far the largest class of romances having success in the United States, has been those by such writers as Mrs. Ann S. Stephens, Mrs. Emma D. E. N. Southworth, Mary Virginia Terhune ('Marion Harland,') Mary D. Holmes, T. S. Arthur (mainly temperance stories), and Mrs. Caroline Lee Hentz. The most of these writers gave in their works reflections of recent British literature, the novels, for instance, of Mrs. Henry Wood, Miss Thackeray, Miss Braddon, and Rhoda

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Broughton being the sources from which many of our women writers have drawn their inspirations, and in many cases their situations, scenic effects, characters, and style, or dialect, while their plots, though varied, were easily recognized as from English originals. In fact it may be said of American fiction in the mass that it has as yet exhibited, except in the direction of humor and in that of short stories, little specific individuality. There are however a few marked exceptions, of which Nathaniel Hawthorne is the type.

There is no school of American fiction, but there are and have been a number of able writers who have written works of marked interest and equal accuracy in their delineation of society, and whose writings have achieved notable popularity. Among such writers are W. D. Howells, Henry James, Francis Marion Crawford, Oliver Wendell Holmes, T. B. Aldrich, Theodore Winthrop, J. G. Holland, and E. P. Roe. These are here classed together only in reference to their popular success: they represent widely different methods, with the utmost variations in style, in intellectual grasp, in analysis of character, and in philosophical depth. To these should be added the names of Arthur Sherburne Hardy, author of the *Wind of Destiny*; Edward Bellamy with his *Looking Backward*, in its wide circulation and influence one of the most remarkable works of fiction with a purpose which this country has produced; 'Sidney Luska,' a promising young Hebrew writer; George W. Cable, an admirable delineator of Louisiana creole life; Lafcadio Hearn, with tropical wealth of descriptive power; T. W. Higginson; Miss Murfree ('Charles Egbert Craddock'); Edward Everett Hale; Edward Eggleston; Amelia E. Barr; Mrs. Burnett.

Unfortunately for American literature, the influence of that of modern France has developed a recent brood of young writers, men and women, whose efforts, while they have attracted wide attention and considerable circulation, have not always been in the direction of public morality or even that of good taste. Some of these have been ushered before the public through the pages of leading magazines. It is not necessary here to give the names of the writers whose works bear such distinctive marks. A number of young women who have derived the inspiration for their plots and characters, as above suggested, from foreign sources, and have produced ephemeral works of wide though probably transient circulation, have sprung up as a peculiar feature of the last few years in American literature. Some of the works of these budding 'author-esses' exhibit a depth and forwardness of social experience hardly to be expected even from writers of riper years, and these too accompanied with a frankness of expression unique in modern literary history.

American fiction, with many noble names, gives, in some recent instances that have gained prominence, a sense of powers misused. The thoughtful critic becomes aware of an influence which if not deleterious, is at least not elevating, which affects writers as well as readers. There is

NOVEMBER—NOVGOROD.

presented an *olla podrida* of fiction out of which it seems impossible to sort the original ingredients, and concerning which it seems equally impossible to conceive any sound reason for its existence. Forgetting one or two novel-writers whose pens move no more, one is tempted to think that though the country is honored by many good writers of fiction, the great American novelist—broad in range, strong in grasp, fine in touch, full of sympathy, yet poised in calm, true to human nature by being true to the high standards and ideals which belong to humanity as its divine birth-right—has yet to appear.

NOVEMBER, n. *nō-vēm'bér* [L. *November*, ninth month of the old Roman year—from *novem*, nine: It. and F. *Novembre*]: eleventh month of the year; in *anc. Rome*, the ninth month, their year beginning with March, as it did in Britain till 1752. November had at first 30 days, then 29; later Julius Cæsar gave it 31; in the reign of Augustus the present number, 30, was given it. It was an important month in the religious ritual of the Romans: Nov. 11 was held to mark the beginning of winter. In the Rom. Cath. ritual it retained prominence, having as principal festivals: All Saints' Day, Nov. 1; All Souls', Nov. 2; St. Martin's, Nov. 11; Presentation of the Virgin, Nov. 21; St. Cecilia's, Nov. 22; etc. In the Anglican calendar the only Nov. feasts retained are All Saints' and St. Andrew's. Nov. was known among the Saxons as *Blot-monath*, 'blood-month,' on account of the general slaughter of cattle at this time, for winter provision (known for a long time afterward as *Martinmas beef*) and for sacrifice—a custom not confined to the Saxons, but prevalent in n. Germany, and even as far s. as Spain. NOVEMBER METEORS, shooting-stars which are seen in their greatest numbers about Nov. 13, 14.

NOVENARY, n. *nōv'ēn-ēr-ī* [L. *novenārius*, consisting of nine—from *novem*, nine]: the number nine; nine collectively: ADJ. pertaining to the number nine.

NOVENAS, n. plu. *nō-vē'nāz* [L. *noveni*, nine each, nine]: in the R. Cath. Chh., nine consecutive days of prayer before any church festival.

NOVENNIAL, a. *nō-vēn'nī-āl* [L. *novem*, nine; *annus*, a year]: done or occurring every ninth year.

NOVERCAL, a. *nō-vēr kāl* [L. *noverca*, a stepmother]: pertaining to, or suitable to, a stepmother.

NOVGOROD, *nōv-gō-rōd'*: government of Great Russia, immediately s.e. of the govt. of St. Petersburg; extreme length s.w. to n.e. 400 m.; 47,240 sq. m. The surface is gently undulating, with the Valdai Hills in the s., which rise to about 300 ft., and may be said to form the watershed between the Baltic, Caspian, and White Seas. N. contains many lakes and rivers; of the former, lakes Ilmen and Bieloe are largest; of the latter, the Wolchov, Msta, Szeksna, and Mologa are most important. The rivers are connected by canals, which are of great service to trade. The soil, especially in the n.e., is not fertile, and the climate is severe; agriculture and cattle-rearing are carried

NOVGOROD—NOVI.

on, but not to a great extent. Forests and pasture lands are numerous and extensive, and the timber and hay sent to the capital realize considerable income. Quarries of the best stone for paving occur on the river Tosna, and near Stara-Russa are mineral and saline springs. Pop. (1880) 1,078,955; (1890) 1,254,900; (1897) 1,392,933.

NOVGOROD': important town of European Russia, cap. of the govt. of N.; on the Volkhof, near where it issues from Lake Ilmen, 122 m. s.s.e. of St. Petersburg. It is the cradle of Russian history. In 862, the Norman prince Rurik, of the tribe of Variago Ross (whence the name *Russia*), was invited hither by the neighboring tribes, and from him begins the history of the country, and the line of its sovereigns. A monument, commemorative of this event was erected here, with great pomp, 1862 Sep. In the 9th c. Oleg, successor of Rurik, transferred the capital to Kief; but bestowed many privileges and liberties on N.; and from that time it began to prosper. The greatness of N. provoked the jealousy of the princes of Moscow, and 1471. the czar Ivan III. nearly destroyed the town, bereft it of its liberties, and exiled its leading citizens. During the time of its prosperity, the town was called Novgorod the Great; and had 400,000 inhabitants, and extended its sway to the White Sea and the river Petchora. Its govt. was a sort of republic, the prince being less a sovereign than the chief commander of the troops. Its greatness was due to its vast foreign trade alone; thence when Archangel was opened for English trading vessels, but especially after the foundation of St. Petersburg, its trade fell away, and the town rapidly declined. Of the existing ancient buildings, the most remarkable are the Church of St. Sophia, founded 11th c., possessing a fine old library, as well as some remarkable paintings and tombs; and the Kreml, in the steeple of which hung the famous bell used to summon the citizens for the deliberation of state affairs. Pop. (1890) 24,438; (1897) 26,075.

NOVGOROD'-SSJEWERSK', *-syā-věrsk'*, or NOVGOROD-SEVERSKOIE, *-sā-věr-skō'yā*: town of Russia, province of Tchernigov, 89 m. n.e. from Tchernigov, on the right bank of the Desna, a branch of the Dnieper. It is cap. of a dist., and has considerable trade and activity. Pop. (1890) 8,005.

NOVGRAD-VOLYNSKI, *nōv-grád'vō-lín'skē*: town of European Russia, govt. of Volhynia, 52 m. w.n.w. from Jitomir; on the banks of the Slutch, a feeder of the Pripiet, and so of the Dnieper. It is cap. of a circle. Pop. about 8,900.

NOVI, *nō'vē*, or NO'VI LIGURE, *lē-gō'rā*: town of n. Italy, province of Alessandria (Piedmont), at foot of the Apennines; a station on the railway from Turin to Genoa, 33 m. n.n.w. of Genoa. It presents few attractions, except a number of picturesque old houses. It carries on considerable transit-trade; and the silk produced in the vicinity is among the most celebrated in Italy.

NOVIBAZAR—NOVOMOSKOVSK.

NOVIBAZAR, *nō vē-bā-zār'*, also YENIBAZAR, *yēn'-ē-bā-zār'* (i.e., *New Market*): town of Bosnia, European Turkey; on the river Rashka, an affluent of the Morava, 130 m. s.e. of Bosna-Serai. N. has celebrated fairs, important trade, and considerable wealth, but the houses are mostly of mud. It is the chief town of a sanjak in the Turkish vilayet of Bosnia, occupied by Austria, 1879, according to the treaty of Berlin, under whose terms Austria does not administer the sanjak (the strip of land between Servia and Montenegro), but garrisons it, and controls the roads. N. has great strategic importance, commanding the communications between Bosnia and Rumelia, and between Servia and Montenegro. Pop. 9,000 to 12,000.

NOVICE, n. *nōv'is* [F. *novice*—from L. *novicius* or *novitius*, a fresh-man—from *novus*, new]: one new in any business or profession; a beginner; one in a convent or nunnery who has not taken the vow; a neophyte or tyro; a proselyte. NOVITIATE, n. *nō-vīsh'ī-āt*, the state or time of being a novice; the time passed in a religious house, by way of trial, before the vow is taken; the time of preparatory training, which in all religious orders precedes the solemn PROFESSION (q.v.) For the general principles by which the training for the 'religious' life is regulated, see MONACHISM. The novitiate in all orders must continue (Conc. Trid. Sess. xxv. c. 85, *De Regul. and Mon.*) at least one year. In most orders it is of two years, and in several of three. Any attempt to solemnize the profession before the expiration of the novitiate, without a dispensation, is invalid. During the novitiate, the novices are immediately subject to a superior, called Master (or Mistress) of Novices. Their whole time is devoted to prayer, and to ascetic and liturgical training. During the novitiate, the novice continues free to withdraw; and the rule provides that he or she shall not be admitted to profession at the close of the novitiate, except after proof of fitness, and the proper dispositions for the particular institute aspired to. NOVICESHIP, the state of a novice.

NOVOARCHANGELSK' or NEW ARCHANGEL: see SITKA.

NOVO-GEORGIEVSK, *nō'vō-gā-ōr-gé-ěvsk'*, or MODLIN, *mod'lin*: first-class fortress of Russia in Poland, at the junction of the Vistula and the Nareff, 19 m. n.w. of Warsaw. It forms the right flank of the line of defense of the Vistula against attacks from the w., the centre of the line being at Warsaw, and the left flank at Ivangorod, 12,000 men are required to defend it. The fortifications afford shelter for about 50,000 men. The town Novoye Myesto, opposite the fortress, has about 5,500 inhabitants.

NOVOMOSKOVSK, *nō-vō-mōs-kōvsk'*: important market-town of s. Russia, govt. of Ekaterinoslav, 20 m. n.n.e. of the town of Ekaterinoslav, on the Samara, an affluent of the Dnieper. Three extensive fairs, for sale chiefly of cattle and horses, are held here annually. The 'remounting' officers attend these fairs for the purpose of supplying their regiments with horses. Tanning and tallow-melting are carried on. Pop. about 19,000.

NOVOTCHERKASK—NOVUM ORGANUM.

NOVOTCHERKASK, *nō-vō-chěr-kâsk'*: town of s. Russia, cap. of the territory of the Cossacks of the Don, on the Aksai, tributary of the Don, 12 m. from its right bank, about 70 m. e.n.e. of Taganrog. The central administration of the territory was transferred hither from Tcherkask 1804 by Count Platoff, commander-in-chief of the Cossacks. The choice was not fortunate, the town being too far from the Don, the great commercial artery. In 1855 a statue was erected in memory of Count Platoff, who achieved an illustrious name by his military exploits 1770-1816, especially during the French invasion 1812. The people are occupied in trade and manufactures, agriculture, cattle-breeding, fishing and wine-growing. Pop. (1880) 37,091; (1890) 38,476.

NOVUM ORGANUM, *nō'vũm awor'ga-nũm*: the great work by Francis Bacon (q.v.), defined in its sub-title as the true pointings-out (*indicia*) concerning the interpretation of nature and the dominion of man (that is, over nature). The title has reference to the scholastic method in the Organon of Aristotle, and was intended to present a contrast with that method. The work was designed to be a portion of a more extensive one, embracing a reconstruction of science as well as of its processes. The marvel is that Bacon, in the midst of all the vain subtleties, and the false and fruitless knowledge spun from human brains, and relying on the baseless authority of such or such a one 'says' and at a time when hardly any solid science existed except astronomy—that he by a kind of infallible intuition conceived and set forth the Inductive Philosophy, the parent (in spirit at least) of modern progress in knowledge. That philosophy involves the observational and experimental method—the careful collection and scrutiny of facts, even to the extent, in his words, of putting nature to torture; and from these facts rigidly deriving laws, principles, and all generalizations. The motive in his view was 'fruit'—practical benefit to man, on which he continually insists; yet he did not overlook the purely intellectual benefit, for he says, 'Works themselves are of greater value as pledges of truth than as contributing to the comforts of life.' The first part of the *Organum* would clear the way by considering the obstacles to progress—the several kinds of errors and fallacies (*idola*), such as those incident to humanity, to the individual, to the misleading by words, to erroneous systems of philosophy and methods of demonstration. The rest of the work goes on to discuss the properties of things and the method to be pursued; and this in some of its elaborate details is open to adverse criticism. Bacon insisted especially on the elimination of the non-essential, in scientific inquiries. He says, 'The induction which is to be available for the discovery and demonstration of sciences and arts must analyze nature by proper rejections and exclusions; and then, after a sufficient number of negatives, come to a conclusion on the affirmative instances.' His method is illustrated by him in the *Organum*, by an investigation into the nature of heat. It has been

NOVUS HOMO—NOWISE.

remarked that the service rendered by Bacon is chiefly in showing the necessity of a critical analysis of experience, but that the progress of science has not been by the exact steps that he recommended—rather in the main by hypothesis, which, while presupposing critical induction, experimentation, verification, is due largely to a scientific imagination.

NOVUS HOMO, n. *nō'vūs hō'mō*, plu. **NOVI HOMINES**, *nō'vī hōm'ī-nēz* [L.]: in Roman antiquity, a man who was the first of his family who had raised himself from obscurity to distinction, without the aid of family connections.

NOW, ad. *now* [AS. *nu*; Dut. *nu*; Icel. *nú*; Gr. *nun*, L. *nunc*, now]: at the present time; very lately; a little while ago; after this; since things are so: **N.** the present time or moment. **NOWADAYS**, ad. *now ā-dāz* [said to be corrup. from *now on days*]: in this age. **NOW AND THEN**, occasionally.

NOWANAGAR, *nō-wān-nūg-gēr'*, or **NAWANUGGUR**: seaport of India, in the peninsula of Kattywar, Guzerat, at the mouth of the Nagna, a small river on the s. shore of the Gulf of Cutch. 160 m. w.s.w. from Ahmedabad, n. lat. 23° 28', e. long. 70° 11'. It is the principal place of the dist. of Hallar, the greater part of which is held as a *jaghire* by the chief of N., who bears the title Jam of Nowanagar. His territory comprises 540 villages, pop. about 290,000. The town of N. is large and populous, nearly four m. in circuit. It has very active trade, and is famous for the fine cloth which it produces, and for the brilliant colors with which its fabrics are dyed. In the adjacent sea are beds of pearl-oysters. Copper ore has been discovered in a range of hills behind the town.

NOWAY, ad. *nō'wā*, or **NO'WAYS**, ad. *-wāz* [*no*, and *way*]: in no manner or degree.

NOWEL, n. *nō'el* [F. *noyau*; OF. *noial*, a fruit stone, a kernel, the spindle of a staircase—from mid. L. *nucālis*—from L. *nux*, a nut]: the core or inner part of a loam-mold used in casting large cylinders or a piece of ordnance, anything contained in a hollow envelope.

NOWELL, *nō'el*, INCREASE: colonist: 1590-1655, Nov. 1. b. England. He came to this country with John Winthrop in the *Arabella* 1630; was made ruling elder of the church in Boston, Aug. of that year, but soon resigned, because he disapproved of the union of church and state in his office; was dismissed from his Boston pastorate, and established a church in Charlestown; was military commissioner 1634, and sec. of the Mass. colony 1644-49. He was an active member of an association to abolish long hair as a mark of 'dignity and estate.' He died in poverty at Boston, and the colony acknowledged his services by granting his widow 1,000 acres of land in Cocheco co., N. H.

NOWHERE, ad. *nō'hwār* [*no*, and *where*]: not in any place.

NOWISE, ad. *nō'wīz* [*no*, and *wise*]. not in any manner or degree.

NOWT—NOYES.

NOWT, or **NOUT**, n. *nowt* [Icel. *naut*; Sw. *noet*, an ox; Scot. *nolt*; Gael. *nith*, cattle]: in *Scot.*, black cattle; an ox; a stupid fellow; in English the phrase is *neat* cattle: see **NEAT** 2.

NOX: goddess of night, one of most ancient deities of classical mythology; daughter of Chaos and sister of Erebus (Darkness), by whom she was mother of Æther (the air) and Hemera (Day); mother also of the Parcæ, Hesperides, Dreams, Discord, Death, Momus, Fraud, etc. In the Temple of Diana at Ephesus, was a famous statue of her by Rhœus. The ancients worshipped her with great solemnity, and Homer represents Zeus as fearing her. A black sheep was offered her as mother of the furies, and a cock because it proclaims the approach of day. She is represented mounted on a chariot, wearing a veil spangled with stars, and preceded by the constellations as special messengers. Sometimes she is holding two children, one black, representing death or night, the other white, sleep or day. She is described also as a woman veiled in mourning, crowned with poppies, her chariot drawn by owls and bats.

NOXIOUS, a. *nôk'shūs* [L. *noxius*, hurtful—from *nôcĕō*, I hurt]: productive of injury or of evil consequences; unwholesome; baneful; poisonous. **NOXIOUSLY**, ad. *nôk'shūs-lī*. **NOXIOUSNESS**, n. *-nēs*, the quality that injures or destroys.—**SYN.** of 'noxious': hurtful; prejudicial; detrimental; pernicious; deleterious; injurious; noisome; harmful; destructive; mischievous; corrupting; insalubrious.

NOY, v. *noy*: OE. for *annoy*. **NOYANCE**, n. *noy'āns*, OE. for *annoyance*. **NOYOUS**, a. *noy'ūs*, in OE., causing annoyance.

NOYADES, *nwā-yād'* [i.e., 'Drownings,' from F. *noyer*, to drown]: execution of the death sentence on political offenders in great numbers at once by drowning them; one of the atrocities of the French Revolution, practiced at Nantes by Carrier, depnty of the Convention: see **CARRIER**. This mode of execution was called in cruel sport, *Vertical Deportation*.

NOYAU, n. *nwī yō'* [F. *noyau*; OF. *noial*, stone of a fruit—from mid. L. *nucĭlis*, an almond—from L. *nux*, a nut]: a cordial flavored with bitter almonds or the kernels of peach-stones: see **LIQUEUR**.

NOYES, *noyss*, EDWARD FOLLANSBEE: b. 1832, Oct. 3, Haverhill, Mass.: He graduated at Dartmouth 1857, and at the law school, Cincinnati, O., 1858; practiced law in Cincinnati until the outbreak of the civil war, when he entered the Federal army, serving as maj., lieut.col., and col. of the 39th O. inf. until 1864, July, when the loss of a leg unfitted him for field duty. He was then assigned to the command of Camp Dennison, and became brig.gen. by brevet. He resigned 1865, Apr. He was afterward city solicitor of Cincinnati, gov. of O. 1871, and in 1877 was appointed U. S. minister to France, and sent on special mission to the Mediterranean countries. He resigned 1881, and resumed law practice; d. 1890, Sep. 4.

NOYES—NUBAR PASHA.

NOYES, GEORGE RAPALL, D.D.: 1798, Mar. 6—1868, June 3; b. Newburyport, Mass. He graduated at Harvard Univ. 1818; studied divinity, and was licensed to preach 1822. He was engaged as tutor 1823–27, and in the latter year settled over a Unit. Church in Brookfield Mass., removing the same year to Petersham. He was considered one of the best Hebrew and Greek scholars in America. He received the degree D.D. from Harvard 1839. He was prof. of oriental languages and lecturer on Biblical literature at Harvard from 1840 till his death. He translated the Old and New Testaments, adding many notes. His works are mostly in the line of Hebrew philology. He died in Cambridge, Mass.

NOYES, JOHN HUMPHREY: see PERFECTIONISTS.

NOYES, WILLIAM CURTIS, D.D.: 1805, Aug. 19—1864, Dec. 25; b. Schoack, Rensselaer co., N. Y. He was admitted to the bar 1827, became dist. atty. of Oneida co., and 1838 removed to New York. In 1857 he was appointed one of the commissioners to codify the state laws, on which work he was engaged until his death. He received the degree LL D. from Hamilton Coll. 1856. He was learned, eloquent, and logical, and deeply interested in public affairs, though not a politician. In 1857 he was nominated by the repub. party as atty. gen., but was defeated, and in 1861 was a prominent candidate for the U. S. senate. He was appointed a member of the peace commission of 1861. He was a warm advocate of temperance, and delivered many addresses on the subject. He died in New York.

NOYON, *nwâ-yông'*: town of France, dept. of Oise, 78 m. n. e. of Paris by the northern railway. It has a fine cathedral ('Notre Dame') of the 12th and 13th c., in the Romanesque style with mixture of Gothic; an episcopal palace, and some linen and cotton manufacturers. N. was a residence of Charlemagne, and here Hugo Capet was crowned King of France 987. It was also the birth-place of John Calvin. Pop. (1881) 5,780.

NOZZLE, n. *nôz'l* [Low. Ger. *nüssel*, the nose; merely a diminutive of nose with the suffix *le* (see NOSE)]: the nose; the snout; the projecting part, as the air-pipe of a bellows, or the part of a lamp that holds the wick.

NUANCE, n. *nû'āngs* [F. *nuance*, a shade—from *nuancer*, to shade]: a shadowing; a shading; a blending of colors.

NUBAR PASHA: Egyptian statesman: b. Smyrna, 1825; Christian in creed. He became Egyptian minister at Vienna 1854: was intrusted with negotiations for the Suez canal 1857–60, and appointed minister of foreign affairs 1866. In 1867 he negotiated the treaty with Constantinople giving Egypt practical autonomy and Ismail the title of Khedive, and in 1868–74 the judicial reform establishing international tribunals. He was dismissed from office 1874 and '78. In the latter year he assisted to form the Anglo-French ministry. He was recalled to office and formed a ministry, 1884, Jan.; and was dismissed by the Khedive, 1888, June.

NUBECULA—NUBIA.

NUBECULA, n. *nū-bĕk'ū-lă* [L. *nubĕc'ŭla*, a little cloud—from *nubēs*, a cloud]: in *astron.*, the Magellanic clouds, two extensive nebulous patches of stars.

NUBIA, *nū bĭ-a*: comparatively modern name for a large region of Africa, formerly a portion of Ethiopia (q.v.), and extending on both sides of the Nile from Egypt on the n. to Abyssinia, Senaar, and Kordofan on the s.; touching the Red Sea on the e. and the desert on the west. It thus comprises the Nile valley from Assouan (Syene) to Khartûm. about 560 m. n. and s., 16°—24° n. lat.; and nearly as far e. and w., 31°—39° e. long. *Nubia Proper*, or *Lower Nubia*, extends from Assouan on the Egyptian frontier to Dongola; beyond that is *Upper Nubia*. But of late the name *Egyptian Sudan*, properly applicable to a section of Upper N., has come to be used for N. in its widest sense, together with the formerly Egyptian territory actually in the Sudan, and the equatorial provinces (see **SUDAN: NILE**). N. is not an administrative division: politically and ethnically it is indefinite; it has, however, a geographical significance, and thus considered it has about 345,000 sq. m.; pop. vaguely estimated 1,000,000 to 1,500,000.

The name is by some derived from the Coptic *Noub*, or Gold; by others from the *Nobatæ* tribe, afterward *Nubas*, with whom it was first historically associated—a name appearing also in *Wady Nuba*, the northernmost section of Lower N., the southern being *Wady Kunuz* (or *Kenons*). Under the Pharaohs, N. was called Cush, and was governed by a royal scribe, entitled Prince of Cush or Ethiopia, till the 20th dynasty, when it appears to have been recovered by a series of native rulers, who ultimately conquered part of Egypt. These Ethiopians adopted the civilization of the Egyptians, and were Christianized: see **ETHIOPIA**. At present the country is occupied by races belonging to several different stocks, which have in most places become much mixed in blood. The chief elements are Arab, mingled with Nilotic and Negro blood, mainly in Upper N.; Ababdeh and Bisharin between the Nile and the Red Sea.; and Nubas and Barabira in Lower N., on and near the Nile between Assouan and Dongola. The Semitic Arabs are comparatively recent intruders. They entered N. after occupying Egypt in the 7th c.; but were resisted by the Christian Dongolawi kings till the 14th c., when the Arabs, assisted by a large contingent of Bosnians, became masters of the land. The *Nobatæ* brought hither by Diocletian, were apparently a negro race. Their modern representatives are the Negro or Negroid Nubas, calling themselves Berbers, Barabras, or Barabira. The ancient Blemmyes were of Hamitic stock, and ethnologically akin to the ancient Egyptians. The Bisharin or Beja are their descendants; and the Ababdeh likewise are Hamitic. The Nuba speech is fundamentally negro in type, akin to the Nubic of Kordofan; and is spoken in three main dialects. Presumably, the aboriginal negro population and tongue have been gradually modified by the admixture of Hamitic and Semitic elements. The va-

rious tribes, most of them active and warlike, are Moslems by faith, and till 1820 were ruled by their own chiefs. In that year, Ismail Pasha made N. an Egyptian territory; and till 1881 it shared the fortunes of Egypt. For its later history, see EGYPT: SUDAN. Both in its lower and in its upper sections, N. is mostly an expanse of steppes or rocky desert, with patches where grass sometimes grows, and ravines in which moisture enough is found to keep alive a few mimosas or palms, and to raise pasture for gazelles and camels. There are also wells and small oases here and there as on the chief caravan routes. The great 'Nubian Desert' lies e. of the Nile, opposite the great w. bend of the river. Below (i.e., north of) Khar-tûm, rain is almost unknown; the climate is accordingly excessively hot and dry, and except in the river ports after the fall of the Nile leaving numerous stagnant pools, is healthful. The only exception to the general aridity is the narrow strip of country on both sides of the Nile, nowhere exceeding four m. in breadth, and in many places only a quarter of a mile wide. The most fertile part is near Dongola. A mountain barrier bounds the valley on both sides of the Nile, and consists of granite and sandstone. The soil raises durra, cotton, and date palms. The country is traversed by the *Buhr el Azrek*, or Blue Nile, and the *Bahr el Abiad*, or White Nile. The products are numerous, comprising maize, dates, tamarinds, gums, aloes, civet, musk, wax, myrrh, frankincense, senna, black wool, hides both of the elephant and rhinoceros, and their ivory, ostrich feathers, ebony, gold dust, saltpetre, salt, tobacco, coffee, cotton, which are carried in commerce to Egypt. The taxes are rated by the number of water-wheels for the irrigation of the land. There being no native currency, the coins of Egypt and Europe, especially the Spanish dollar, are received, but glass-beads, coral, cloth, *tobs* or shirts, and cloth (*samoor*) also pass as money. In Kordofan, value is reckoned by cows. The most primitive modes of measurement are in use, maize being sold by the handful (*selga*), 18 of which go to a *moud*; and cloth being measured from the elbow to the fingers. Polygamy is general, and a wife at Kenous is purchased of her parents for 30 piastres (about \$1.50); among the Arabs for 6 camels, 3 of which are returned to the bridegroom. Some of the tribes are jealous of their women, who are celebrated by travellers for their virtue. In their costume, they use turbans, linen, and woollen garments; and they are armed with lance and shield, the latter made of the hide of the hippopotamus. They have no looms, but they plait neatly. Their chief musical instrument is a guitar of five strings, with sounding-board of a gazelle's hide. They are generally averse to commerce, eat little animal food, and are Mohammedans. Their houses are low huts of mud or stone. The chief attraction of this country to travellers is the numerous temples and other ancient remains of the Egyptians, extending from Philæ to the Island of Argo. These consist of the temple of Isis, in the isle of Philæ, founded by Nectanebo I., and con-

NUCAMENT—NUCULA.

tinued by the Ptolemies; the temple of Deboud, built in honor of Amen Ra, by Ataramen, and continued by the Romans; Tafa or Taphis, modern Kulabshe, built by Rameses II.; the rock temple of Beit e Welly, recording the conquests of the same monarch; Wady Halfa, built by Osertesén I.; the rock temple of Ibsamboul, built by Rameses II.; Gebel Addéh, built by Horus of the 18th dynasty; Ibrim, built by Amenophes II.; Amada, founded by Thothmes III.; Ghersheh, Sebona, and Derri, built by Rameses II.; Dakkeh, anc. Pseleis, built by Ergamenes; and the Colossus of the Isle of Argo; the Pyramids of Meroë and Tanquassi.—Burekhardt, *Travels*: Champollion le Jeune, *Lettres Ecrites*, 107, and foll.; Lepsius, *Reise*, 107, and foll.

NUCAMENT, n. *nū'kă-měnt* [L. *nucamen'tum*, a long excrescence hanging from the pine—from *nux*, a nut]: in *bot.*, a catkin or cat's-tail—the blossom of the hazel-pine, willow, etc. **NU'CAMENTA'CEOUS**, a. *-tū'shūs*, pert. to nuts.

NUCIFEROUS, a. *nū-sīf ěr-ūs* [L. *nux*, a nut, *nūcis*, of a nut; *fero*, I bear]: bearing or producing nuts.

NUCLEAR. **NUCLEATED**: see under **NUCLEUS**.

NUCLEOBRANCHIATA, *nū'klē-ō-brăng'kî-ā'ta*, or **HETEROPODA**, *hět-ěr-ōp'o-da*: order of gasteropods having the sexes distinct; the locomotive organ fin-like, single, and ventral; the gills packed in small compass with the heart. They all are marine, and swim usually with the back downward and the fin-shaped foot upward. They adhere to sea-weeds by a small sucker on the fin. Some of them, e.g. *Atlanta*, have a shell large enough to protect the body; some, e.g. *Carinaria*, have a small shell covering the gills and heart only; and some, e.g. *Firola*, have no shell at all.

NUCLEOLITES, n. plu. *nū klē'ō-līts* [L. *nuclĕus*, a little nut or kernel; Gr. *lithos*, a stone]: a genus of fossil scurichins characterized by their long inflated shell, rounded in front and flat behind.

NUCLEUS, n. *nū'klĕ-ūs* [L. *nuclĕus*, a small nut, a kernel—from *nux*, a nut: It. *nucleo*]: anything round which matter has accumulated; that which may form the solid basis, as the *nucleus* of an army; that which may form the centre of development (see **CELL-THEORY**): the solid center of any nodule or rounded mass; the central fleshy part of an ovule; the body of a comet: plu. **NU'CLEI**, *-ī*. **NU'CLEAR**, a. *-ēr*, pertaining to or connected with a nucleus. **NU'CLEATED**, a. *-ā tĕd*, having a nucleus or central part. **NUCLEOLUS**, n. *nū-klĕ'ō-lūs*, a small nucleus; a very minute body contained within a nucleus.

NUCULA, n. *nū'kū-lā* [L. *nucula*, a small nut—from *nux*, a nut]: in *bot.*, a hard pericarp of horny or bony texture; an extensive genus of bivalves characterized by their trigonal inflated shells; also spelled **NUCULE**, n. *nū'kūl*, in its *bot.* signification. **NUCULANIUM** n. *nū'kū-lī'nĭ-ŭm*. in *bot.*, a two or more celled indehiscent fruit, formed from a superior ovule filled with fleshy pulp, and containing seeds, as in the grape.

NUDE—NUEVO LEON.

NUDE, a. *nūd* [L. *nudus*, naked: It. *nudo*: F. *nu*]: bare; naked: N. among *artists*, the undraped human body. **NUDELY**, ad. *-li*. **NUDITY**, n. *nū di-ti* [F. *nudité*]: nakedness.

NUDGE, v. *nŭj* [Low. Ger. *nutschen*, to squeeze: Austrian, *nussen*, to thrust with the fist: Scot *gnidge*, to squeeze: Icel. *knyja*: Dan. *knuge*, to press]: to touch gently with the elbow or knuckles, as a signal for attention or information: N. a gentle push with the elbow for information, etc. **NUDG'ING**, imp. **NUDGED**, pp. *nŭjd*.

NUDIBRANCHIATE, a. *nū dī-brāng kī-āt* [L. *nudus*, naked; Gr. *branchia*, gills]: pertaining to the order of molluscous animals having no shells whatever, and having naked gills. **NUDIBRANCHIA'TA**, n plu. *-kī-ā'tā*, order of molluscous animals—gasteropods, hermaphrodite, destitute of shell, and having the gills exposed on the surface of the body. The gills are differently situated in different genera. The genus *Doris* (q.v.) is an example of this order.

NUECES, *nwā'sēz*, Sp. *nwā'sās*, RIVER: stream in s.w. Texas, rising lat. 30°, long. 101° w. It flows s.e. 300 m. into Corpus Christi Bay, and through the Pass of Corpus Christi into the Gulf of Mexico.

NUEL, and **NEWEL**, n. *nū ēl*: see under **NOWEL**.

NUEVA SPAR'TA: see **MARGARITA**.

NUEVO LEON, *nwā'vo lā ōn'*: interior Mexican state, bounded n. by Rio Grande, e. by Tamaulipas, s. by San Luis Potosi and Zacatecas, w. by Coahuila; 23 635 sq. m. The surface is irregular, being traversed by the Sierra Madre system; the s. portion is part of the great central tableland of Mexico. There are no navigable rivers, though numerous branches of the Rio Grande intersect the extensive valleys, which consist of forests, pasture lands, and cultivated fields; these streams have steep courses, while mountain torrents and small lakes are numerous. The soil is generally fertile, but needs irrigation. The chief products are sugar cane and maize, three crops of the latter being harvested annually: a little wheat and barley are raised. Minerals include gold, silver, copper, iron, cinna-bar, and lead; salt is abundant, but little worked; nitrate of potash, sulphur, and several varieties of sulphate of lime, alabaster, and marble are found. The development of mines is limited. In the vicinity of Morelos and Monterey, sulphur and hot springs are common. The climate is hot and unhealthy in the lowlands, where intermittent and malignant fevers prevail, but more temperate in the higher regions. Steam-power is employed to some extent in the large manufactories of cotton goods, hats, furniture, boots and shoes. Considerable attention is given to education. The nine districts of Nueva Leon are Monterey, Villaldama, Doctor Arroyo, Cadereita, Victoria, Salinas, Linares, Morelos, Gracia, and Cerralvo. Monterey is the cap.; other important towns are Morelos, Saltillo, Linares and Cadereita. Pop. of state (1900) 326,940.

NUGATORY—NUISANCE.

NUGATORY, a. *nū'gǎ-tēr-ī* [L. *nugatōriūs*, trifling, worthless—from *nugæ*, trifles: It. *nugatorio*]: useless; trifling; futile; ineffectual; of no force.

NUGGET, n. *nŭg gèt* [prov. Erg. *nug*, a block; *nugget*, a little block: OE. *niggot*, a lump of gold or silver—supposed to be the corruption of *an ingot*], the name given by gold-diggers to those irregular pieces of the precious metal found in auriferous soil, of all sizes, from that of a pea to lumps many pounds in weight.

NUGGINA, or **NUGEENAH**, or **NAGINA**, *nŭg-ē'na*: town of Brit. India, dist. of Bijnur, division of Rohilcund, N. W. Provinces; 48 m. n.n.w. from Moradabad, on the route from Moradabad to Hurdwar. N. is the Birmingham of Upper India, and famous in modern times for manufacture of gun-barrels and percussion-locks. Pop. (1881) 20,503.

NUISANCE, n. *nŭ'sǎns* [OF. *nuisance*, damage, wrong: It. *nocenza*, fault, error: F. *nuissant*, hurting: L. *nocērē*, to hurt (see **NOISOME**)]: anything offensive or injurious; something that produces inconvenience or damage; annoyance.—Nuisance, in *law*, denotes whatever is an annoyance to one's neighbors, or in a general sense to the public at large, in the exercise of their rights of property. The whole doctrine of N. is founded on the theory that every person is entitled to have the full use and enjoyment of his property, and of the right of passing to and fro on the highway without being interfered with or impeded by others, and whatever so impedes this full enjoyment of one's property and right of passage on the highway is a N. Nuisances are thus capable of being divided into two kinds—private and public. Thus, if a neighbor leave a heap of rubbish emitting noxious smells close to A's windows, or make loud unseemly noises in his own house, these may be said to be private nuisances, for they annoy A in the enjoyment of the fresh air and quiet which are part of his right of property. On the other hand, if something is put of the same kind on a public highway, or so as to annoy divers people equally and in the same manner, then it is called a public N. One of the leading incidents of a N. is, that the party annoyed by it can in many cases, especially where the N. is injurious to health or life take the law into his own hands and abate the N. without resorting to a court of law. The reason is, that the matter is of too urgent importance to await the slow progress of a suit at law, and mischief may be done in the meantime which would often be irreparable owing to the delay. Another important qualification of the right of abating a N. is, that the N. must be such that unless it is abated at once the party cannot exercise his legal rights; and hence if the N. is of such a kind that it does not directly interfere with the comfort or enjoyment of one's legal rights at the time, he has no right to abate it, but in that case is bound to resort to a court of law. This is best illustrated in the case of a N. on the highway, which is the class of cases in which the phrase a common N. is most familiarly known. Thus, if while A is riding or driving along the highway his progress is interrupted by a fence or gate

NUISANCE.

which nobody has a legal right to put there, it is obvious that unless A can knock down or demolish at once this obstruction, he cannot proceed in the exercise of his legal right of using the highway. In such a case he has a right to demolish the gate and abate the N., for it directly interferes with his own legal right. But if instead, a gate, a booth, or tent had been erected, not across the highway, but merely on one side of it, so as to leave room for passengers to pass, then though such tent or booth would be as undoubted a N. as in the other case, yet inasmuch as A can pass without direct interference, he has no right to abate the N. by destroying the tent. He must, in this latter case, resort to the legal remedy only. The same rule applies to all kinds of nuisances.

Another rule is, that in abating a N. the party is not to do unnecessary damage to property, i.e., more than simply abate the N. to such an extent as to enable himself to exercise his legal right, and no further. If he go beyond the immediate occasion, and cause unnecessary destruction to property, then he subjects himself to an action of damages. Hence it is often difficult to know when one is justified in abating a N. and taking the law into his own hands.

Where the N. is sought to be removed by legal means, then the remedy is in some cases twofold, and in some cases not so. Where the N. is of a private nature, an action of damages is in general the only remedy given by the common law. But where the N. is public, and affects all the public equally, or nearly so, then in general either an action may be brought, or an indictment will lie. Thus in case of a N. on a highway, as this affects all the citizens alike, an indictment is the proper remedy, though if an individual suffer special damage over and above what he suffers as one of the public, then he may bring an action.

The legal remedy in cases of N. has long been felt to be insufficient. To add to the other defects, there is great difficulty in determining whether a particular mode of using one's premises is in the nature of a N. or not; for if the line is drawn too narrowly, the rights of property and the natural freedom of the citizen may be interfered with. On the other hand, things which formerly were considered no nuisances are now treated as such, owing to the general increase of enlightenment, refinement, and sensitiveness. The common law has been altered by acts establishing municipal or other local boards having in charge sanitary improvements, such as drainage and water supply on a large scale. These boards exercise extensive powers for correction or removal of whatever is shown to be a N., or injurious to health, either by its own nature, or through abuse or neglect, or improper management. Within their purview as nuisances are filthy cesspools or drains, deposits or accumulations of offensive or decaying matter, overcrowded tenements, animals kept in injurious proximity to dwellings, manufacturing processes needlessly producing unhealthful effluvia, etc. It is to be noted, however, that a thing may be a N. in one place, or at one time, and not so

NUKHA—NULLIFICATION.

In another: circumstances must be considered, sometimes also the previous history of the case.

Beside the above usual legal acceptation of the term N., the word is sometimes familiarly applied to disorderly houses or brothels, described as common nuisances.

NUKHA, or NUCHA, or NOUKHA, *nó-chá'*: town of Russia; after Tiflis and Shemacha, the most important in Transcaucasia, and only town of the former khanat of N. or Sheki, in n.w. Shirwan. It is 173 m. e.s.e. from Tiflis; at the s. base of the Caucasus in the valley of the Kish-Tsbai, affluent of the Alasan, which itself is a branch of the Kur. N. has about 3,000 houses, mostly of mud and thatched with reeds; it has a great fortress-palace (built 1765), four churches, and 31 mosques. The town is surrounded for several miles by mulberry groves and fruit-gardens. It has long been famous for the rearing of silk-worms, silk-spinning, and silk manufacture. Pop. (1897) 24,811, and 21 villages in its dist. of 1,442 sq. m. contain about as many more people.

NULL, a. *nŭl* [F. *null*—from L. *nullus*, none: It. *nullo*]: of no legal or binding force; void; invalid: V. in *OE.*, to annul. NULLITY, n. *nŭl'lti*, want of existence or force; want of legal force or validity.

NUL'LA BO'NA: legal phrase, descriptive of the return made to a sheriff who in executing process against a debtor finds that he has no goods.

NULLAH, n. *nŭl'lá* [Pers. *nāla*, a small river]: in the *E. Indies*, a term applied to streams, water-courses, or canals.

NULLIFICATION OF UNITED STATES LAWS: in American politics, the doctrine of the extreme states' rights party, of the right of a state to declare a law of congress unconstitutional and void, even though it had been formally approved by the pres. and declared constitutional by the U. S. supreme court; and if the Federal govt. attempted to enforce it, the further right to secede from the Union. The germ of this remarkable political speculation is traceable in the Ky. and Va. resolutions of 1798-9, drawn up by Jefferson, regarding the alien and sedition laws—in which the assertion is made that the general govt. is not 'the final or exclusive judge of the extent of the powers delegated to itself, but that . . . each party has an equal right to judge for itself, as well of infractions as of the mode and measure of redress.' In congress Senator Hayne of S. Car. advocated this speculation, and called forth Webster's historic reply 1830. In 1832, during the presidency of Gen. Jackson (q.v.), the free trade and states' rights party in S. Car. (q.v.), under the astute leadership of John C. Calhoun (q.v.), her senator in congress, asserted the doctrine of N. in a state convention at Charleston which declared the tariff acts by congress of that year unconstitutional, therefore null and void; that the duties should not be paid; and that any attempt on the part of the general govt. to enforce their payment would cause the withdrawal of S. Car. from the Union, and the establishment of an independent government. Pres. Jackson

NULLIFY—NUMB.

met this declaration with a vigorous proclamation, in which he declared that the laws must be executed, and that 'the Union must and shall be preserved.' South Car. finding herself standing alone, receded from her position under protest, and a 'Compromise Bill,' introduced by Henry Clay (q.v.) 1833, providing for a gradual reduction of duties, quieted for the time the controversy, renewed and settled a generation later in the war of secession.

NULLIFY, v. *nŭl'li-fi* [L. *nullus*, none; *fio*, I am made]: to deprive of legal force or efficacy; to render void or invalid. **NUL'LIFYING**, imp. **NUL'LIFIED**, pp. *-fid*. **NUL'LIFIER**, n. *-ér*, one who makes void. **NULLIFICATION**, n. *nŭl'li-fi-kā'shŭn* [L. *facio*, I make]: the act of nullifying; the rendering void and of no effect (see **NULLIFICATION OF U. S. LAWS**).—**SYN.** of 'nullify': to annul; repeal, abolish; abrogate; revoke; void.

NULLIPORES, n. plu. *nŭl'li-pōrz* [L. *nullus*, none, *porus*, a pore]: a sort of marine plants resembling corals in so far as they secrete lime on their surfaces, but having no pores like corals—hence the name.

NUMANTIA, *nŭ-m'in'shŭ-a*: chief town of the Celtiberian people called Arevaci in anc. Spain; on the Douro (Durius), in the neighborhood of the present Soria in Old Castile. The site is probably marked by the present Puente de Guarray. N. is famed for its heroic resistance to the Romans, from B.C. 153, when its citizens first met a Roman army in battle, to B.C. 134, when it was taken and destroyed by Scipio the younger, after a siege of 15 months, in the course of which famine and the sword had left alive very few of its 8,000 brave defenders. The besieging force under Scipio amounted to 60,000 men.

NUMA POMPILIUS, *nŭ'ma pŏm-pŭl'ŭs*, in the Mythic History of Rome: second of the kings of Rome, being successor of Romulus, the founder of the city. He was a native of Cures in the Sabine country, and was revered for wisdom and piety. Unanimously elected king by the Roman people, he soon justified their choice by his conduct. After dividing the lands which Romulus had conquered, he proceeded, with the assistance of the sacred nymph Egeria, to draw up religious institutions for his subjects, and thus stands out in the primitive legend as the author of the Roman ceremonial law. His reign of 43 years was a golden age of peace and happiness. The only feature in the myth of N. P. which is probably historical, is that which indicates the infusion of a Sabine religious element into Roman history at some early period.

NUMB, a. *nŭm* [Goth. and AS. *niman*; Icel. *nema*, to take away; Icel. *numinn*, taken away. **NUMB** was formerly and correctly spelled **NUM**]: destitute of the power of sensation and motion; torpid; chill: V. to deprive of the power of sensation or motion; to chill; to stupefy; to deaden. **NUMBING**, imp.: **ADJ.** causing numbness, rendering torpid. **NUMBED**, pp. *nŭmd*: **ADJ.** rendered torpid. **NUMBNESS**, n. *nŭm'nēs*, state of being numb; torpor; deadness; stupefaction.—**SYN.** of 'numb, a.': paralyzed: benumbed; motionless; stupefied.

NUMBER—NUMBERS.

NUMBER, n. *nŭm'bĕr* [F. *nombre*—from L. *numĕrus*, a number]: one, or more than one; many; a multitude; a collection of units or things of the same kind; in *gram.*, the variations in the endings of words, as of nouns and verbs, to express sing. or plu.; division of a work published in parts; in the plu. *numbers*, poetic measure or verse: V. to reckon as one of a collection or multitude; to count; to calculate. **NUM'BERING**, imp. **NUM'BERED**, pp. *-berd*. **NUM'BERER**, n. *-ĕr*, one who numbers. **NUM'BERS**, n. plu. *-berz*, the fourth book of the Old Test. Scrip. **NUM'BERLESS**, a. not admitting of being counted; innumerable. **CARDINAL NUMBERS** are one, two, three, etc. **ORDINAL NUMBERS** are first, second, third, etc. **GOLDEN NUMBER**, the cycle of the moon, or revolution of 19 years, obtained by adding 1 to the year A.D., and dividing by 19—the quotient being the number of cycles since Christ, and the remainder the *golden number*—so called from having formerly been written in the calendar in gold. **ABSTRACT NUMBER**, a number considered apart from anything, as 6. **CONCRETE NUMBER**, its opposite, means a number limiting or designating something, as 6 pence, 6 feet. **PRIME NUMBER**, a number that can only be divided by unity or 1. **SQUARE NUMBER**, the product of a number multiplied by itself. **WHOLE NUMBER**, an integer; not a fraction.—**SYN.** of 'number, v.': to reckon; numerate; enumerate; tell; amount to; contain; include; consist of;—of 'number, n.': quantity; aggregate; many; harmony; verse; poetry; part; division; badge.

NUMBERS (LXX. *Arithmoi*; Heb. *Bamidbar*): fourth book of the Pentateuch, embracing the history of the march of the Israelites through the Desert, with the special laws given during this period as complementary to the Sinaitic legislation. Beginning with the census of the people (whence the name of the book), and the assigning of the special places to each tribe with reference to the sanctuary, the whole people is classified, and the tribe of Levi specially singled out. Ordinances on the purity to be maintained in the camp, the functions of the priests, and a description of the passover, follow. The second portion of the book describes the journey from Sinai to the borders of Canaan, the miraculous sustenance of the people, their dissatisfaction and consequent rejection, with various special laws respecting sacrifices, etc., and the episode of Korah. The third part embraces the first ten months of the 40th year of the wandering—an epoch hurried over with remarkable swiftness by the historian. In quick succession, the renewed strife of the people with their leaders, the message to the king of Moab, the death of Aaron, the defeat of the king of Arad, the punishment of the people by serpents, the march from Hor to Pisga, and the victorious battle against the kings of Sihon and Og, are recounted, and the extraordinary episode of Balaam follows. The further wiles of the alarmed Moabites and Midianites to avert the threatening invasion, and their result, with the second census, are narrated. Moses is warned of his death, and the vital question of his succession is settled. Further

laws and ordinances respecting sacrifices and vows, the conquest of the Midianites, and the partition of the country e. of the Jordan among certain tribes, a recapitulation of the encampments in the Desert, a detailed specification of the manner in which the promised land should be divided after its conquest, and the final ordinance of the marriages of heiresses among their own tribe only, so as to preserve the integrity of landed property, make up the remainder of the book.

The Book of N. is, like the rest of the Pentateuch, supposed by many modern critics to consist of several documents written by *Elohists* and *Jehovists* respectively. See GENESIS: PENTATEUCH.

NUMBERS, THEORY OF: the most subtle and intricate, and one of the most extensive branches of mathematical analysis. It treats primarily of the forms of numbers, and of the properties at once deducible from these forms; but its principal field is the theory of equations, as far as equations are soluble in whole numbers or rational fractions, and particularly that branch known as Indeterminate Equations. Closely allied to this branch are those problems usually grouped under the Diophantine Analysis (q.v.), a class of problems alike interesting and difficult; and of which the following are examples: 1. *Find the numbers the sum of whose squares shall be a square number*; a condition satisfied by 5 and 13, 8 and 15, 9 and 40, etc. 2. *Find three square numbers in arithmetical progression*; Answer, 1, 25, and 49; 4, 100, 196, etc.

Forms of Numbers are certain algebraic formulas, which, by assigning to the letters successive numerical values from 0 upward, are capable of producing all numbers without exception, e.g., by giving to m the successive values 0, 1, 2, 3, etc., in any of the following groups of formulas: $2m$, $2m + 1$; $3m$, $3m + 1$, $3m + 2$; $4m$, $4m + 1$, $4m + 2$, $4m + 3$, we can produce the natural series of numbers. These formulas are based on the self-evident principle, that the remainder after division is less than the divisor, and that, consequently, every number can be represented in the form of the product of two factors + a number less than the smaller factor.

By means of these formulas, many properties of numbers can be demonstrated without difficulty. A few examples follow. (1.) *The product of two consecutive numbers is divisible by 2*: Let $2m$ be one number, then the other is either $2m + 1$ or $2m - 1$, and the product $2m(2m \pm 1)$ contains 2 as a factor, and is thus divisible by 2. (2.) *The product of three consecutive numbers is divisible by 6*: Let $3m$ be one of the numbers (as in every triad of consecutive numbers one must be a multiple of 3), then the others are either $3m - 2$, $3m - 1$; $3m - 1$, $3m + 1$; or $3m + 1$, $3m + 2$. In the first and third cases, the proposition is manifest, as $(3m - 2)(3m - 1)$, and $(3m + 1)(3m + 2)$, are each divisible by 2, and therefore their product into $3m$ is divisible by 6 ($= 1.2.3$). In the second case the product is $3m(3m - 1)(3m + 1)$, or $3m(9m^2 - 1)$, where 3 is a factor, and it is necessary to show that $m(9m^2 - 1)$ is divisible by

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2; if m be even, the thing is proved; but if odd, then m^2 is odd, $9m^2$ is odd, and $9m^2 - 1$ is even; hence, in this case also the proposition is true. It can similarly be proved that the product of four consecutive numbers is divisible by 24 ($= 1.2.3.4$), of 5 consecutive numbers by 120 ($= 1.2.3.4.5$), and so on generally. These propositions form the basis for proof of many properties of numbers, such as that the difference of the squares of any two odd numbers is divisible by 8. The difference between a number and its cube is the product of three consecutive numbers, and is consequently (see above) always divisible by 6. Any prime number which, when divided by 4, leaves a remainder unity, is the sum of two square numbers: thus, $41 = 25 + 16 = 5^2 + 4^2$, $233 = 169 + 64 = 13^2 + 8^2$, etc.

Besides these, there are a great many interesting properties of numbers which defy classification; such as, that the sum of the odd numbers beginning with unity is a square number (the square of the number of terms added), i.e., $1 + 3 + 5 = 9 = 3^2$, $1 + 3 + 5 + 7 + 9 = 25 = 5^2$, etc.; and, the sum of the cubes of the natural numbers is the square of the sum of the numbers, i.e., $1^3 + 2^3 + 3^3 = 1 + 8 + 27 = 36 = (1 + 2 + 3)^2$, $1^3 + 2^3 + 3^3 + 4^3 = 100 = (1 + 2 + 3 + 4)^2$, etc.

Numbers themselves are divided into *prime* and *composite*—prime numbers being those which contain no factor greater than unity; composite numbers, those which are the product of two (not reckoning unity) or more factors. The number of primes is unlimited, and so consequently are the others. The product of any number of consecutive numbers is even, as are also the squares of all even numbers; while the product of two odd numbers, or the squares of odd numbers, are odd. Every composite number can be put under the form of a product of powers of numbers; thus, $144 = 2^4 \times 3^2$, or generally, $n = a^p.b^q.c^r$, where a , b , and c are prime numbers, and the number of the divisors of such a composite number is equal to the product $(p+1)(q+1)(r+1)$, unity and the number itself being included. In the case of 144, the number of divisors would be $(4+1)(2+1)$, or 5×3 , or 15, which we find by trial to be the case. *Perfect numbers* are those which are equal to the sum of their divisors (the number itself being of course excepted); thus, $6 = 1 + 2 + 3$, $28 = 1 + 2 + 4 + 7 + 14$, and 496, are perfect numbers. *Amicable numbers* are pairs of numbers, either one of the pair being equal to the sum of the divisors of the other; thus, $220 (= 1 + 2 + 4 + 5 + 10 + 11 + 20 + 22 + 44 + 55 + 110 = 284)$, and $284 (= 1 + 2 + 4 + 71 + 142 = 220)$, are amicable numbers. For other series of numbers, see FIGURATE NUMBERS.

The most ancient writer on the theory of numbers was Diophantus, 3d c.; and the subject received no further development till the time of Vieta, and of Fermat, author of several celebrated theorems, who greatly extended it. Euler next added his quota and was followed by Lagrange, Legendre and Gauss, who in turn successfully applied themselves to the study of numbers, and brought the theory to its present state. Cauchy, Libri, and Gill (in

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America), also have studied it with success. The chief authorities down to the present century are Barlow's *Theory of Numbers* (1811), Legendre's *Essai sur la Théorie des Nombres* (third ed. Paris 1830), and Gauss's *Disquisitiones Arithmeticae* (Brunswick 1801; Fr. transl. 1807) and for the latest discoveries, the transactions of the various learned societies may be consulted.

NUMBLES, n. plu. *nŭm'blz*, or UMBLES, n. plu. *ŭm'blz* [F. *nombril*—from L. *umbilic'ŭlus*, a dim. of L. *umbilic'us*, the navel, the middle]: the entrails of a deer, pig, etc.; also spelled NOMBLES, n. plu. *nŭm'blz*, and HUMBLEs, *hŭm'blz*.

NUMENIUS, n. *nŭ-mē'nĭ-ŭs*: the scientific name for the curlew.

NUMERAL, n. *nŭ'mēr-āl* [It. *numerales*; F. *numéral*, of or belonging to number—from L. *numērālis*—from *numērus*, a number]: a symbol or character used to express a number (see NUMERALS): ADJ. relating to or expressing number. NU'MERALLY, ad. *-lĭ*. ARABIC NUMERALS are 1, 2, 3, 4, etc. ROMAN NUMERALS are I., II., III., IV., etc. NUMERICAL, a. *nŭ-mēr'ĭ-kāl*, or NUMERIC, a. *-ĭk*, belonging to or consisting in number or numbers. NUMERICALLY, ad. *-lĭ*. NUMERARY, a. *nŭ'mēr-ēr-ĭ*, belonging to a certain number. NUMERATE, v. *nŭ'mēr-āt*, to point off and read, as figures; to calculate. NU'MERATING, imp. NUMERATED, pp. NU'MERATOR, n. *-ā-tēr*, the figure or figures above the line in a vulgar fraction, denoting a certain number of the parts into which the whole or integer has been divided. NU'MERABLE, a. *-ā-bl*, that may be numbered. NUMERA'TION, n. *-ā'shŭn* [F.—L.]: the act or art of pointing off a series of figures according to their values with the view of expressing them in words (see below). NU'MEROUS, a. *-ŭs* [L. *numerōsus*; F. *numereux*]: consisting of a great number; being many. NU'MEROUSLY, ad. *-lĭ*.

NUMERALS: figures or symbols expressing numbers. For Roman and Greek numerals, see NOTATION. The distinctive name *Arabic Numerals* is given to the nine figures or digits and the zero, in almost universal use among civilized nations for this purpose. Both the origin of these figures, and the period at which they became known in Europe, have been subjects of laborious investigation; and it seems now proved beyond doubt that they are of Indian not Arabic origin, and were invented by the Brahmins before the time of Christ. But the more important inquiry as to the time of their introduction into Europe has baffled all research. The simple and convenient theory, that they were introduced into Spain by the conquering Arabs, and from that country, then a great seat of learning, a knowledge of them was disseminated through Europe, is contradicted by the fact that the e. Arabs themselves had no knowledge of them previous to the time of the Caliph Al-Mamun (813-833), while a knowledge of them existed in Europe from a considerably earlier date. The most probable theory is, that they were brought from India, probably by the Neo-Pythagoreans, and introduced into Italy, whence they became known to a few of the learned men

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of eastern Europe. We have, however, every reason to suppose that the figures then known were totally different in form from those now used. These latter, called *Gobar* by the Arabs, may have been brought to Bagdad during the reign of Al-Mansor (760), or his immediate successors, and certainly not later than the time of Al-Mamun. During the latter reign we know the present system of arithmetic was introduced into Persia from India, and probably a knowledge of the Gobar figures at the same time. Thence the system of arithmetic was brought to n.w. Africa and Spain, and doubtless the figures with it, about the end of the 10th or beginning of the 11th century, and from Spain a knowledge of both was speedily communicated to the rest of Europe, the Gobar figures superseding those forms of Eastern figures previously in use. - The knowledge of the figures however spread, as was natural, much more rapidly than the notation and arithmetic of which they were the foundation, and we consequently find in writings and inscriptions of the middle ages the Gobar figures partly substituted for, and mixed up with, the Roman numerals; as, for instance, XXX2, for 32; X4, for 14, etc.; and occasionally such expressions as 302, 303, for 32 and 33. The earliest work on modern arithmetic was published in Germany 1390; it explained the decimal notation, and exemplified the elementary rules. The Arabic numerals were not generally introduced into England till the commencement of the 17th c., and it was long after that time before the decimal arithmetic became general. See Woepke, *Sur les Chiffres Indiens*; Taylor, *The Alphabet* (1883).

NUMERA'TION: reading off of numbers that are expressed by figures. As shown in Notation (q.v.), the first figure on the right hand expresses units; the next, tens; the third, hundreds; and following the same nomenclature with the next three figures, we have the fourth expressing units of thousands; the fifth, tens of thousands; the sixth, hundreds of thousands. The seventh figure, in like manner, expresses units of millions; the eighth, tens of millions; and the ninth, hundreds of millions. When this method is consistently followed out, as is the case with French and other continental arithmeticians, the fourth period, or group of three figures, is denominated billions, the first figure of it (the tenth from the extreme right) being, units of billions; the next, tens of billions; etc. Read in this way, the figures 56,084,763,204,504 express fifty-six trillions, eighty-four billions, seven-hundred-and-sixty-three millions, two-hundred-and-four thousands, five-hundred and four units. In Britain, there is a variation in the mode, the only effect of which is to render it more complicated: thus, after units of millions, come tens and hundreds of millions, but then instead of billions we have, according to the current usage, thousands of millions; after this, tens of thousands of millions and hundreds of thousands of millions, and then billions, which occupy the 13th figure from the right, and are reckoned in the same way as millions, so that the next unit or *trillions*

NUMIDA—NUMIDIA.

does not come in till the 19th figure. The above number, according to the British mode, would be read fifty-six billions, eighty-four-thousand-seven-hundred-and-sixty-three millions, two hundred-and-four thousands, five-hundred-and-four units. The first method is perfectly symmetrical, keeping throughout to divisions of three figures; the second only keeps to this division up to hundreds of millions, when it changes it for a division into parcels of six figures, which are named from units up to hundreds of thousands of units. The latter mode is, however, gradually falling into disuse.

NUMIDA, n. *nū'mī-dī*: a genus of gallinaceous birds, including the Guinea Fowl (q.v.).

NUMIDIA, *nī-mīd'ī-a* [Gr. *Nomadia*, land of Nomads]: the name given by the Romans to a part of the n. coast of Africa, corresponding to some extent with the modern Algiers. It was bounded on the w. by the river Mulucha (now *Moluya*), which separated it from Mauritania; on the e. by the river Tusca (now *Wadi-el-Berler*), which separated it from the territory of Carthage, the *Africa Frœgia* of the Romans; on the s., it reached to the chains of Mount Atlas and the Lacus Tritonis, which separated it from the land of the Gætulians and Interior Libya. The chief rivers were the Rubricatus and the Ampsaga. The inhabitants of n., as of Mauritania, belonged to the race from which the modern Berber are descended. They were a warlike race, and excelled as horsemen; but, like most barbarians, were faithless and unscrupulous. Of their tribes, the *Mussyli* in the e., and the *Massæsyli* in the w., were the most powerful. In the grand struggle between the Carthaginians and the Romans, they at first fought on the side of the former, but subsequently the king of the E. Numidians, Masinissa, joined the Romans, and rendered them effectual service in the war with Hannibal. Favored by the conquerors, he united all N. under his sway. Of his successors in this kingdom, Jugurtha and Juba are most famous. After the victory of Cæsar over Juba I., in the African war, N. became a Roman province B.C. 46; but Augustus afterward gave the w. part—from the river Ampsaga, now Wadi-el-Kibbir—with Mauritania, to Juba II., and the name N. became limited to the e. part; and when Mauritania became a Roman province, the w. part was called Mauritania Cæsariensis. Among the Roman *coloniæ* were Hippo Regius, near the mouth of the river Rubricatus; Cirta (residence of the Numidian kings), afterward called Constantina, a name still preserved in Constantine; Sicca, and Rusicada. For the modern history of N., see ALGIERS.

NUMISMATIC—NUMISMATICS.

NUMISMATIC, a. *nū-mīs-māl'ik* [L. *num'isma*, money, coin: Gr. *nōm'isma*, coined money—from *nōmōs*, law or usage]: pert. to coin or medals. **NUMISMAT'ICS**, n. plu. *-iks*, the science or knowledge of coins and medals in regard to their age, name, and place when made (see below): called also **NUMIS'MATOL'OGY**, n. *-tōl'ō-jī*. **NUMIS'MATOL'OGIST**, n. *-jīst* [Gr. *logos*, a discourse]: one versed in the knowledge or study of coins and medals. **NUMISMATIST**, n. *nū-mīs'mā-tīst*, one who is skilled in numismatics.

NUMISMAT'ICS: science which treats of coins and medals. A coin is a piece of metal of a fixed weight stamped by authority of government and employed as a circulating medium. A medal is a piece struck to commemorate an event or (rarely) in honor of a person. The study of N. has important bearing on history. Coins have been the means of ascertaining the names of forgotten countries and cities, their position, their chronology, the succession of their kings, their usages—civil, military, and religious—and the style of their art. On their respective coins we can behold undoubtedly accurate representations of Mithridates, Julius Cæsar, Augustus, Nero, Caracalla, and read their features and character.

The metals generally used for coinage are gold, silver, and copper. In each class is comprised the alloy occasionally substituted for it, as electrum (an alloy of gold and silver) for gold, billon for silver, bronze for copper, and potin (an alloy softer than billon) for silver and copper. The side of a coin which bears the most important device or inscription is called the *obverse*, the other side the *reverse*. The words or letters on a coin are called its inscription; an inscription surrounding the border is called the *legend*. When the lower part of the reverse is distinctly separated from the main device, it is called the *exergue* (Gr. *ex ergou*, without the work), and often bears a secondary inscription, with the date or place of mintage. The field is the space on the surface of the coin unoccupied by the principal device or inscription.

The use of coined money cannot be traced farther back than B.C. 9th c. Money, however, as a medium of exchange, existed much earlier, and when of metal it passed by weight, no piece being adjusted to any precise weight, and all money being weighed when exchanged. Early metallic money was in the form of bars, spikes, and rings; the ring money could be opened, closed, and linked in a chain for convenience of carriage.

The Lydians are supposed to have been the first people who used coined money, about B.C. 700 or 800; and their example was soon after followed by the different states of Greece, the earliest Greek coins being those of Ægina. In early stages the process of coining consisted in placing a lump of metal of a fixed weight, and approaching to a globular form, over a die, on which was engraved the religious or national symbol to be impressed. A wedge or punch placed at the back of the metal was held steadily with one hand and struck by a

hammer with the other, till the metal was sufficiently fixed in the die to receive a good impression. The impression was a guarantee of the weight of the piece. From the nature of the process, the earliest coins had a lumpish appearance, and on their reverse was a rough, irregular, hollow square, corresponding to a similar square on the punch, devised for the purpose of keeping the coin steady when struck by the coining hammer. The original coins of Asia Minor were of gold, those of Greece of silver. The earliest coins bear emblems of a sacred character, often embodying some legend regarding the foundation of the state, as the *phoca* or seal on the coins of the Phocians, which alludes to the shoal of seals said

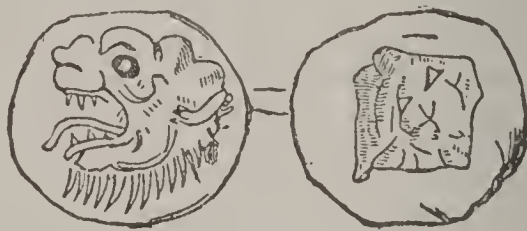


Fig. 1.

to have followed the fleet during the emigration of the people. Fig. 1 represents a very early double stater of Miletus, in Ionia, of which the type is the lion's head, derived from Persia and Assyria, and associated with the worship of Cybele—a symbol continued in the later coinage of Miletus. Types of this kind were succeeded by portraits of protecting deities. The earliest coins of Athens have the owl, as type of the goddess Athene; at a later period, the head of the goddess herself takes its place, the owl afterward reappearing on the reverse. The punch-mark, at first a rudely roughed square, soon assumed the more slightly form of deep, wedge-like indents, which in later specimens become more regular, till they form themselves into a tolerably symmetrical square. In the next stage the indents become shallower, and consist of four squares forming one large one.

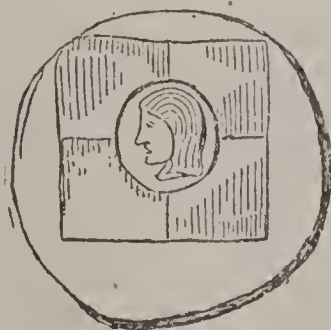


Fig. 2.

The surrounding of the punch-mark with a band bearing a name, and the introduction of a head in its centre, as in the annexed figure (fig. 2), gradually led to the perfect reverse. There is a remarkable series of so-called 'encased' coins struck in Magna Græcia, of which the reverse is an exact repetition in concave of the relief of the obverse. These coins are thin, flat, sharp in

relief, and beautifully executed.

The leading coin of Greece and the Greek colonies was the stater, so called because founded on a standard of weight generally received before the introduction of coined money. There were double staters and half, third, and quarter staters, and the stater was equivalent

in value to six of the silver pieces called drachmæ. The obolus was one-sixth of the drachma, at first struck in silver, in later times in copper.

The inscriptions on the earliest Greek coins consist of a single letter, the initial of the city where they were struck. The remaining letters, or a portion of them, were added afterward, the name, when in full, being in the genitive case. Monograms sometimes occur in addition to the name, or part name, of the place. The first coin bearing the name of a king is the tetradrachm (or piece of four drachmæ) of Alexander I. of Macedon.

Among the early coins of Asia, one of the most celebrated is the stater Daricus or Daric, named from Darius Hystaspes. It had for symbol an archer kneeling on one knee, and seems to have been coined for the Greek colonies of Asia by their Persian conquerors. In the reign of Philip of Macedon, the coinage of Greece had attained its full development, having a perfect reverse. One of the earliest specimens of the complete coin is a beautiful medal struck at Syracuse, with the head of Proser-



Fig. 3.

pine accompanied by dolphins, and for reverse a victor in the Olympic games, in a chariot, receiving a wreath from Victory—a type found also on the reverse of the staters of Philip of Macedon, known as Philips, and largely imitated by other states. Coins of Alexander the Great are abundant, many having been struck after his conquests in the Greek towns of Asia. A rose distinguishes those struck at Rhodes, a bee those struck at Ephesus, etc.; these all are types generally accompanying the figure of Zeus on the reverse; on the obverse is the head of Hercules, which has sometimes been supposed to be that of Alexander himself. It seems, rather, that the conqueror's immediate successors were the first who placed their portraits on the coins, and that under a shallow pretense of deification—Lysimachus as a descendant of Bacchus, and Seleucus of Apollo, clothed in the attributes of these deities. Two most beautiful and important series of Greek coins are those of the Seleucidæ, in Asia, of silver; and of the Lagidæ or Ptolemies, in Egypt, of gold.

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In Palestine there is an interesting series of coins founded on the religious history of the Jewish nation and assigned to Simon Maccabæus. They are shekels and half-shekels, equivalent to two Attic drachmæ and one drachma respectively. The shekels bear on the obverse the pot of manna, with the inscription 'Schekel Israel' (the Shekel of Israel); on the reverse is Aaron's rod with three flowers, and the legend 'Ierouschalim kedoschah' (Jerusalem the Holy). The inscriptions are in the Samaritan character. The successors of Simon assumed the title king, and placed their portraits on the coins, with inscriptions in Greek as well as in Hebrew.

Roman coins belong to three different series, known as the Republican, the Family, and the Imperial.

The so-called Republican, the earliest coinage, began at an early period of Roman history, and subsisted till about B.C. 80. Its standard metal was copper, or rather *æs* or bronze, an alloy of copper. The standard unit

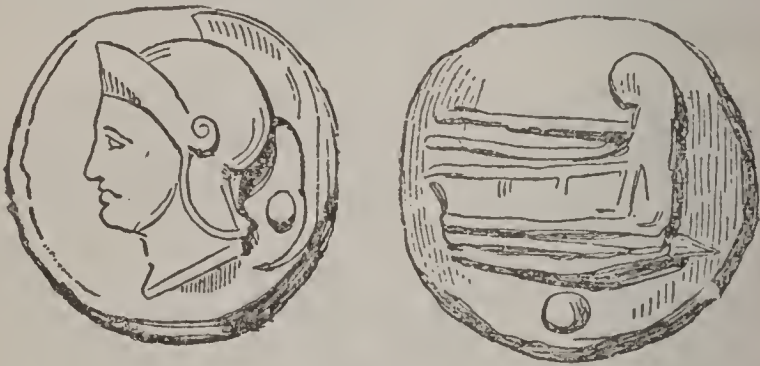


Fig. 4.

was the pound weight divided into twelve ounces. The *æs*, or *as*, or pound of bronze, is said to have received a state impress as early as the reign of Servius Tullius, B.C. 578. This gigantic piece was oblong like a brick, and stamped with the representation of an ox or sheep, whence the word *pecunia*, from *pecus*, cattle. The full pound of the *as* was gradually reduced, always retaining the 12 (nominally) uncial subdivisions, till its actual weight came to be no more than a quarter of an ounce. About the time when the *as* had diminished to nine ounces, the square form was exchanged for the circular. This large copper coin, called the '*as grave*,' was not struck with the punch, but cast, and exhibited on the obverse the Janus bifrons; and on the reverse, the prow of a ship, with the numeral I. Of the fractions of the *as*, the sextans, or sixth part, generally bears the head of Mercury, and the uncia, or ounce piece (fig. 4), that of Minerva; these pieces being further distinguished by dots or knobs, one for each ounce. There were circular pieces as high as the decussis, or piece of 12 asses, presenting a head of Roma (or Minerva); but none are known to have been coined till the weight of the *as* had diminished to four ounces. The Roman uncial coinage extended to the other states of Italy, where a variety of

types was introduced, including mythological heads and animals. In the reign of Augustus, the as was virtually superseded by the sestertius, called by numismatists the first bronze, about the size of an English penny, which was at first of the value of $2\frac{1}{2}$, afterward of 4, asses. The sestertius derived its value from the silver denarius, of which it was the fourth. The half of the sestertius was the dupondius (known as the second bronze), and the half of the dupondius was called the assarium, an old name of the as. The assarium is known to numismatists as the third bronze.

Silver was coined at Rome first about B.C. 281, the standard being founded on the Greek drachma, then equivalent in value to ten asses; the new coin was therefore called a denarius, or piece of ten asses. The earliest silver coined at Rome has on the obverse the head of Roma (differing from Minerva by having wings attached to the helmet); on the reverse is a quadriga or biga, or the Dioscuri. Among various other types which occur in the silver of the Italian towns subject to Rome are the horse's head and galloping horse, both very beautiful. During the social war, the revolted states coined money independently of Rome, and used various devices to distinguish it as Italian and not Roman money.

The earliest gold coins seem to have been issued about B.C. 90, and consisted of the scrupulum, equivalent to 20 sestertii, and the double and treble scrupulum. These pieces bear the head of Mars on the obverse, and on the reverse an eagle standing on a thunderbolt, with the inscription 'Roma' on the exergue. The large early republican coins were cast, not struck.

The Family Coins begin about B.C. 170; and about B.C. 80 they entirely supersede the coins above described. Those families who successively held offices connected with the public mint acquired the right first to inscribe their names on the money, afterward to introduce symbols of events in their own family history. These types gradually superseded the natural ones; the portrait of an ancestor followed; and then the portrait of a living citizen, Julius Cæsar.

Under the empire, the copper sestertius, which had displaced the as, continued the monetary standard. A magnificent series remains of the first bronzes of the emperors from Augustus to Gallienus. While it was the privilege of the emperors to coin gold and silver, copper could be coined only *ex senatusconsulto*, which from the time of Augustus was expressed on the coins by the letters S.C., or EX S.C. The obverse of the imperial coins bears the portraits of the successive emperors, sometimes of the empress or other members of the imperial family; and the reverse represents some event, military or social, of the emperor's reign, sometimes allegorized. The emperor's name and title are inscribed on the obverse, and sometimes partly continued on the reverse; the inscription on the reverse generally relates

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to the subject delineated; and toward the close of the 3d c., the exergue of the reverse is occupied by the name of the town where the coin is struck. The coins of Augustus and those of Livia, Antonia, and Agrippina the Elder have much artistic merit. The workmanship of Nero's sesterii is very beautiful. The coins of Vespasian and Titus commemorate the conquest of Judæa. The Coliseum appears on a sestertius of Vespasian. The coins of Trajan are noted for their architectural types. Hadrian's coins commemorate his journeys. The coins and medals of Antonine, Marcus Aurelius, and the two Faustinae are well executed; as are also those of Commodus, of whom a remarkable medallion relates to the conquest of Britain. There is a rapid falling off in design after the time of Commodus, and base silver comes extensively into use in the reign of Caracalla. Gallienus introduced the practice of coining money of copper washed with silver.

The colonial and provincial money of this period was very inferior to that coined in Rome. In the coins of the provinces which had been formed out of the Greek empire, the obverse bears the emperor's head, and the reverse generally the chief temple of the gods in the city of coinage; the inscriptions are in Greek. In the imperial coins of Alexandria appear such characteristic devices as the heads of Jupiter Ammon, Isis, and Canopus, the sphinx, the serpent, the lotus, and the wheat-ear. Colonial coins were distinguished at first by a team of oxen, afterward by banners, the number of which indicated the number of legions from which the colony had been drawn.

After the time of Gallienus, the colonial money and the Greek imperial money, except that of Alexandria, ceased, and much of the Roman coinage was executed in the provinces, the name of the town of issue appearing on the exergue. Diocletian introduced a new piece of money, called the follis, which became the chief coin of the lower empire. The first bronze has disappeared after Gallienus, and the second disappears after Diocletian, the third bronze diminishing to $\frac{1}{20}$ of an ounce. With the establishment of Christianity under Constantine, a few Christian types are introduced. The third bronze of that emperor has the Labarum (q.v.), with the monogram IHS (q.v.). Large medallions called *contorniati*, encircled with a deep groove, belong to this period, and seem to have been prizes for distribution at the public games. Pagan types recur on the coins of Julian; and after his time the third bronze disappears.

The money of the Byzantine empire forms a link between ancient and modern coins. The portrait of the emperor on the obverse is after the 10th c. supported by some protecting saint. The reverse has at first such types as Victory with a cross, afterward a representation of the Savior or the Virgin; in some instances, the Virgin supporting the walls of Constantinople. Latin is gradually superseded by Greek in the inscriptions, and

wholly disappears by the time of Alexius I. The chief gold piece was the solidus or nomisma, long famed in commerce for its purity, and circulated largely in w. as well as e. Europe.

Of the coins of the middle ages, the most important is the silver denier or penny, derived from the Latin denarius. Its half was the obole, first of silver, afterward of billon. Coins of this description were issued in the German empire, France, England, and the Scandinavian states, and in many cases by ecclesiastical princes and feudal lords as well as sovereigns. The obverse of the regal coin of the early middle ages is generally the bust of the sovereign, and the reverse a Greek cross, accompanied by the royal name or title, and the place of mintage or the moneyer (see MINT). The arms of the country were introduced in the 12th c., in conjunction with the cross, and afterward superseded it. In the 13th and 14th c., coins began to be issued by free imperial cities or corporations of towns; and there prevailed extensively throughout Germany and other parts of Europe a thin piece called a bracteate, in relief on one side and hollow on the other, often bearing not a single letter, rarely a full inscription. Till the 14th c., the relief of the mediæval coins is very inconsiderable, the pieces are thin, and the art is poor.

Britain received the Roman money on its subjugation. Constantine seems to have had a mint in London, and the



Fig. 5.

Roman currency continued to circulate for a time after the departure of the conquerors. The first independent coinage, however, shows hardly a trace of the influence of Rome; it consists of two small coins, called the skeatta and styca, the former of silver, the latter of copper. Both seem to belong solely to the Saxon kingdom of Northumbria; they are without inscriptions; a bird, a rude profile, and several unintelligible symbols appear on them, and their art is of the most debased kind. In the other kingdoms of the heptarchy, silver pennies were coined, first intended to be $\frac{1}{6}$ of a pound weight; on the disappearance of skeattæ and stycæ, they form, with the occasional addition of half-pennies, the sole currency of England till the reign of Edward III. The pennies of the heptarchy bear the name of the king or of the moneyer; a cross sometimes appears after the introduction of Christianity, and in later times a rude head of the king or queen. The pennies of the Saxon and Danish sole monarchs of England have a some-

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what similar character. Alfred's earlier coins have a grotesque-looking portrait, and on the reverse a monogram of London; in his later coins the head disappears, and a cross and circle take its place. A cross, variously ornamented with three pellets in each angle, continues to be the usual reverse of the Saxon, Norman, and Plantagenet coins. The coins of Edward III. are a great artistic advance on those that preceded them. The silver coinage of that king consisted not only of pennies, half-pennies, and farthings, but also of groats and half-groats. The obverse of the groat bears a conventional crowned head within a flowered circle of nine arches, the words 'Dei Gratia' and the title 'Rex Franciæ' appearing for the first time in the legend. The reverse has the motto 'Posui Deum adiutorem meum,' which continued on the coinage till the time of Edward V. But the great numismatic feature of Edward III.'s reign is the issue of gold nobles, worth six shillings and eightpence. The obverse of these beautiful coins represents the king in a ship, a sword in his right hand, in his left a shield with the quartered arms of France and England. The reverse is a rich cross flory within a circle of eight arches, and a lion under a crown in each angle of the cross, the legend being 'Ihesus autem transiens per medium illorum ibat.' Half and quarter nobles also were coined. The noble having increased in value, a coin called an angel, of the former value of a noble, was issued by Henry VI. and Edward IV. The obverse represented St. Michael transfixing a dragon; the reverse a ship, with a cross for the mast.

As we approach the period of the Reformation, the coinage gradually becomes more ornate. The nobles coined by Edward IV., after the value of that coin had been fixed at ten shillings, were called rials (a name derived from a French coin), and the double rial or sovereign was coined first by Henry VII. The obverse has the king on his throne, with sceptre and orb, and on the reverse, in the centre of a heraldic full-blown rose, is a shield with the arms of France and England. The testoon, or shilling, valued at 12 pence, also appeared first in this reign, with the royal profile crowned on the obverse, and the royal arms quartered by the cross on the reverse. A great debasement of the coinage took place in the reign of Henry VIII. The reverse of the farthings of that monarch bears a portcullis, that of the shillings a rose surmounted by a crown, and of the sovereigns, the royal arms supported by a lion and dragon. A noble was coined with St. George and the dragon on the obverse, and on the reverse a ship, with three crosses for masts and a rose on the centre mast. On the coins of Henry VIII., the title 'Hiberniæ Rex' first appeared, former kings having styled themselves only 'Dominus Hiberniæ,' Ireland not being accounted a kingdom. Under Edward VI., the silver coins called crowns and half-crowns appear, having for device the king crowned on horseback, in the armor of the period. They derived

their names from coins, circulating on the continent, which had for device a crown. The royal arms in an oval shield, without the cross, are introduced as the reverse of the shilling. From this period there is a very obvious decline in the artistic feeling of the English coins. On some of the shillings of Mary, her bust and that of Philip face each other, the insignia of Spain and England impaled occupying the reverse; afterward the king's head occupies one side of the coin, and the queen's the other. Half-sovereigns, or rials, and angels were coined of the old type of Edward IV. The great event in the coinage of Elizabeth's reign was the temporary introduction of the mill and screw, instead of the hammer and punch, producing coins of a more regular and workmanlike appearance. The profile bust of James I., crowned and in armor, appears on his shillings and smaller pieces; on his crowns and half-crowns he is represented on horseback; on the reverse are the quartered arms of the three kingdoms (the harp of Ireland appearing for the first time on the coinage), with the motto '*Que Deux conjunxit nemo separet.*' Copper farthings, with crown, sceptre, and sword on the obverse, and a harp on the reverse, were coined for England as well as Ireland, the first copper money issued in England since the styca. Private tokens of copper, issued by tradesmen and others, had, however, been in circulation before, and came again into use to a large extent at a later period. Charles I. coined ten and twenty shilling pieces of silver, the former a very noble coin, with a representation of the king on horseback. A crown struck at Oxford bears on the obverse the king on horseback, with a representation of the town, and on the reverse the heads of the Oxford declaration. The guinea, first coined in this reign, was so called from the metal being procured from the coast of Guinea; its original value was but 20 shillings.

The coins of the Commonwealth exhibit a shield with the cross of St. George surrounded by a palm and olive branch, and have for legend '*The Commonwealth of England.*' On the reverse are two shields accollée, with the cross of St. George and the harp of Ireland, and the motto '*God with us.*' Coins far superior in character were executed by Cromwell, with his laureated bust and title as Protector, and on the reverse a crowned shield quartering the cross of St. George, of St. Andrew, and the harp, with the Protector's paternal arms in surtout; but few of these were issued. In the early coins of Charles II., that monarch is crowned, and in the dress of the time; in his later money he is in conventionalized Roman drapery, with the head turned to the left; and since that time it has been the practice to turn every king's head the reverse way from that of his predecessor. The four shields on the reverse are disposed in the form of a cross (an arrangement which continued till the reign of George II.), and on the edge of the crowns and half-crowns is the legend '*Decus et tutamen.*'

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Charles II. issued a copper coinage of half-pennies and farthings; on the former appears the device of Britannia, taken from the Roman coins relating to Britain. Pennies were not coined till George III.'s reign. The coins of William and Mary have the profiles of the king and queen one over the other, and the shields of the three kingdoms in the form of a cross on the reverse, with Nassau in the centre. The coinage of William alone, after the death of Mary, is of somewhat improved design, Sir Isaac Newton being then master of the mint. Little change in the general design of the coin occurs in the reigns of Anne and George I. On the accession of the House of Hanover, the Hanoverian arms are placed in the fourth shield, and George IV. substituted a quartered shield, with Nassau in surtout, for the four shields on the reverse of his gold coins. During the greater part of George III.'s reign, the coinage was utterly neglected, and the silver pieces in circulation were worn perfectly smooth. When coins were at last issued, the Roman conventionalism of the previous reigns gave way to a then fashionable Greek conventionalism. The quartered shield supplanted the four shields, and on the reverse of the crown appeared a Grecianized St. George and the dragon. George IV.'s bust is taken from Chantrey's statue; the rose, the thistle, and the shamrock, united under a crown, appear on the reverse of his shilling. Silver groats were issued in the reign of William IV. The ensigns of Hanover disappeared at the beginning of the present reign; the reverse of the shilling is even poorer than that of George IV.—the words 'One shilling' occupy the field, surrounded by an oak branch and a laurel branch; silver pieces of threepence have been introduced. But the principal monetary event is the issue of the silver florin, in value equivalent to two shillings, looked on as a step toward the institution of a decimal coinage. It represents the head of the queen crowned, with the legend in old English character; and for reverse the four shields are once more placed in the form of a cross.

No native Scottish coinage existed earlier than the 11th c. Coins are extant of Somerled, Prince of the Isles, of that century, and of Alexander I. of the century following. The silver pennies of William the Lion, and Alexander II. and III., are like contemporary English money, but ruder, and bear the names of the moneyers and place of mintage, generally Edinburgh, Perth, or Berwick. The profiles on the coins of John Balliol, Robert Bruce, and David II. are attempts at portraiture. A remarkable gold piece, coined first by Robert II., is the St. Andrew, with the arms of Scotland on the obverse, and St. Andrew on his cross on the reverse. In the four succeeding reigns, the weight of the silver coins rapidly decreased, and coins of billon, or base metal, were issued, nominally pennies, but three and a half of which eventually passed for a silver penny. The evil increased, and baser and baser alloy was used. Groats of

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billon, known as placks and half-placks, were coined by James III. James IV.'s coins have a characteristic portrait and a good deal of artistic feeling. James III. and IV. issued well-executed gold pieces, called unicorns and riders, the type of the one being the unicorn, and of the other the king on horseback. A still more beautiful coin was the gold bonnet-piece of James V., so called from the cap in the king's portrait. Of Mary, there is a great variety of interesting pieces. The portrait is sometimes crowned, sometimes uncrowned, and on the coin issued soon after Francis's death has a widow's cap and high-frilled dress. The types in James VI.'s reign also are very various. On his accession to the English throne, the relative value of English and Scottish coins was declared to be as 12 to 1. The coins afterward issued from the Scottish mint differed from the English, chiefly in having Scotland in the first quarter in the royal shield. The last Scottish gold coinage consisted of pistoles and half-pistoles of Darien gold, about the size of a guinea and half-guinea, struck by William III.; the pistole distinguished by a rising sun under the bust of the king.

The coinage of Ireland is scanty and uninteresting compared with that of Scotland. The coins of English monarchs struck in Dublin resemble much those current in England. Henry VIII. first placed a harp on the Irish coins.

In France, the earliest coins are those of the Merovingian kings, rude imitations of the late Roman and early Byzantine money, and mostly of gold. Under the Carolingian dynasty, deniers and oboles are the prevailing coinage, remarkably rude in fabric, without portrait, and bearing the name of the king and place of mintage. Some coins of Charlemagne, struck at Rome, are of better workmanship. They contain one letter of 'Roma' at each extremity of the cross, with the legend 'Carolus IP.' The coinage improved under the Capetian kings; the fleur-de-lis appears in addition to the cross. In the 13th c., gold pieces were issued, and, in the time of Philip VI., both the design and the execution of the coins are beautiful. The coins of Louis XII. are the first that bear the royal portrait. The modern coinage may be said to begin under Henry II., whose portrait is good. The seigniorial coins of France in the middle ages are of considerable importance, and the medals of Louis XIV. and Napoleon I. are much more interesting than the modern coins.

The mediæval coinage of Italy is of great interest. The money of the Lombard kings of Italy and dukes of Benevento is little inferior to that of the Greek emperors. There is a beautiful series of gold and silver pieces belonging to Venice, bearing the names of the doges, and having generally for type the doge receiving the gonfalon, or standard of St. Mark. The gold florins of Florence, with the lily for device, are no less celebrated, and were imitated by other states. Florence had also a

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remarkable series of medals, with admirable portraits of persons of note. The coins of the popes, from Hadrian I. down to the 14th c., bear the names of the pope and the emperor of the west; those of later date are beautiful in execution, and have seated portraits of the pontiffs, with the cross-keys and mitre for reverse. A remarkable series of medals commemorates the chief events of each reign, one of which, struck after the massacre of St. Bartholomew, has for type an angel slaying the Huguenots, and the inscription 'Ugonottorum strages.' The coins of the Norman princes of Naples, struck in Sicily, have the legends partly or wholly in Arabic. Malta has a series, with the arms and effigies of the grand-masters.

The mediæval money of Germany comprises coins of the emperors, the electors, the smaller princes, the religious houses, and the towns. The imperial series is extensive and very interesting; though, till near the close of the middle ages, it is rather backward in its art. About the Reformation period, however, there are vigorous portraits both on its current coins and on the medals, and on those double dollars which are virtually medals. The coins of the dukes of Saxony, with their portraits, are equally remarkable. The coins of the archbishops of Cologne, Mainz, and Treves form a very interesting series, the first especially, with a representation of the cathedral.

The coins of the Low Countries resemble those of France and Germany. The Dutch medals are of interest, especially those struck in commemoration of events in the war with Spain.

The coins of the Swiss cantons and towns during the early period of Swiss independence bore the heraldic shield of each, drawn with vigorous grotesqueness. There are also pieces struck by ecclesiastical lords, and by different families who had a right of coinage.

The coins of Spain begin with those of the Gothic princes, chiefly of gold, and on the model of the trientes and semisses of the lower empire. Some of the early pieces have a rude head of the monarch on one side, and of the emperor on the other. Afterward, the obverse bears the profile of the monarch, and the reverse a cross of some description, with the name of the place of mintage, and the word 'Pius' for legend. In later times, there are two interesting series of coins, belonging to the kingdom of Aragon and to the kingdom of Castile and Leon.

The coinages of Norway and Sweden at first resembled the British, and afterward the German type. From the 10th to the 14th c., bracteates were issued by the ecclesiastics. The coinage of Hungary begins in the 11th c., and has the portraits of the monarchs. The Russian coinage is Byzantine in character and rude in art. The earliest pieces are the silver darga of the 14th c., of oblong shape, with representations of the prince on horseback and various legendary subjects. Peter the Great introduced the usual European type. There is an im-

portant series of bronze coins of the Crusaders, beginning with Tancred and continuing till the end of the 15th c., including money of the kings of Cyprus and Jerusalem, and other princes established in the East.

In India, the succession of the kings of Bactria, remotest of the dynasties founded on the ruins of Alexander's empire, has become known only through their recently discovered coins. There are early rude Hindu coins of the Gupta line, with figures of the Brahminical divinities of a type still in use.

Of the coins of the Mohammedan princes, the oldest gold pieces are the bilingual coins of cities of Syria and Palestine, of the middle of the 7th c. (A.H. 78), barbarous imitations of the latest Byzantine money of Alexandria. Most of the Mohammedan coins are covered exclusively by inscriptions expressive of the elementary principles of the Mohammedan faith. For some centuries, no sovereign except the caliph was allowed to inscribe his name on the coin. Large gold coins of great purity were issued by the Moslem kings of Granada in Spain.

The high prices given for ancient coins have led to numerous forgeries from the 15th c. onward: against these imitations, collectors require to be on their guard.

Among the best works on N. are: Eckhel, *Doctrina Numorum Veterum* (Vienna 1792-98); Hennin, *Manuel de Numismatique Ancienne* (Paris 1830); Grasset, *Handbuch der alten Numismatik* (Leipzig 1852-3); Leake, *Numismata Hellenica* (London 1854); Ruding's *Annals of the Coinage of Great Britain* (London 1840); Patrick's *Records of the Coinage of Scotland* (1877); Leblanc, *Traité Historique des Monnoies de France* (Paris 1690); Cappe, *Die Münzen der Deutschen Kaiser* (1850); Marsden, *Numismata Orientalia Illustrata* (London 1823-25); Boutkovski, *Dictionnaire Numismatique* (Leipzig 1877).

NUMMARY—NUMSKULL

NUMMARY, a. *nŭm'mér-ĭ*, or NUM'MULAR, a. *-mŭ-lér* [L. *num'ulus* or *num'mulus*, money—from *nummus*, a coin]: having the character or form of a coin; in heaps like rolls of money; flattened out like a piece of money.

NUMMULITES, n. *nŭm'mŭ-ĭts*, or NUMMULINA, n. *nŭm'ŭ-lĭ'nă* [L. *nummus*, a coin; Gr. *lithos*, a stone]: extensive class of fossil many-chambered foraminifera—so called from their general resemblance to a coin or piece of money—found in inconceivable numbers in the rocks of the tertiary strata, which hence are called *Nummulite Limestone* or *Nummulitic Limestone*. NUM'MULIT'IC, a. *-lit'ik*, pert. to.—*Nummulites* are a genus of fossil foraminifera, the shells of which form immense masses of rock of Eocene age. More than 50 species have been described. They are circular bodies of lenticular shape, varying in magnitude from the merest point to the size and shape of a large coin. In Egypt, where the whole of the Mokkadam Mts., from whose stone the pyramids were built, is formed of them, the natives call them 'Pharaoh's Pence.' The shell is composed of a series of small chambers arranged in a concentric manner. The growth of the shell takes place not only around the circumference, but each whorl invests all the preceding whorls, so as to form a new layer over the entire surface of the disk, thus adding to the thickness as well as the breadth, and giving the fossil its lenticular form. A thin intervening space separates each layer from the one which it covers, and this space at the margin swells out to form the chamber. All the internal cavities, however, seem to have been occupied with the living sarcode, and an intimate connection was maintained between them by means of innumerable parallel tubuli, which everywhere pass from one surface to another, and which permitted the passage of the sarcode as freely as do the minute pores or foramina of the living foraminifera. *Nummulite Limestone* is an important member of the Middle Eocene period, consisting of a limestone composed of nummulites held together by a matrix formed of the comminuted particles of their shells and of smaller foraminifera. It forms immense masses of the strata raised up on the sides of the Alps and Himalayas, and may be traced as a broad band often 1,800 m. in breadth, and frequently of enormous thickness, from the Atlantic shores of Europe and Africa, through w. Asia, to n. India and China: it is known to cover also vast areas in N. America.

NUMSKULL, n. *nŭm'skŭl* [*numb*, and *skull*]: a dunce; a blockhead.

NUN—NUNCHEON.

NUN, n. *nŭn* [mid. L. *nunna*; It. *nonna*, a grandmother, the first nuns being naturally elderly women]: woman devoted to a religious life under a vow of celibacy, poverty, and obedience to a superior, and who lives secluded from the world in a nunnery: a female recluse. **NUN'NISH**, a. *-nĭsh*, pert. to a nun. **NUNNERY**, n. *nŭn'-nēr-ĭ*, a house inhabited by nuns.—The word *Nun* is found in use as a Latin word as early as the time of St. Jerome (*Ep. to Eustachius*, p. 22, c. 6). For the general characteristics of the religious orders, see **MONACHISM**: also, titles of the several orders. Notable among the distinctive peculiarities of the religious orders of females is the strictness—in the regularly authorized orders of nuns—of the 'cloister,' or inclosure, which no extern is ever permitted to enter, and beyond which the nuns are never permitted to pass, without express leave of the bishop. The superiors of convents of nuns are called by the names Abbess, Prioress, and, in general, Mother Superior. They are, ordinarily speaking, elected by chapters of their own body, with approval of the bishop, unless the convent be one of the class called exempt houses, which are immediately subject to the Holy See. The ceremony of the solemn blessing or inauguration of the abbess is reserved to the bishop, or to a priest delegated by the bishop. The authority of the abbess over her nuns is very comprehensive; but a precise line is drawn between her powers and those of the priestly office, from which she is strictly debarred. The name Nun is given in general to the sisters of all religious congregations of females who live in retirement and are bound by rule; but it is primitively and properly applicable only to sisters of the religious orders strictly so called: see **MONACHISM**: **MONASTERY**.

NUNC DIMITTIS, *nŭngk dī-mĭt'ĭs* [L. 'Now lettest thou depart'—the opening words]: the canticle of Simeon (Luke ii. 29–32), which forms part of the compline office of the Roman Breviary and of the vesper office in the Greek Chh., and is retained in the evening service of the Anglican Chh., where it follows the second lesson. On the great festivals in Lent, the music of this canticle is especially grand and imposing.

NUNCHEON, n. *nŭn'shŭn* [from an older form, *none-schenche*—from *none*, noon; *schénche*, a pouring out of drink—from L. *nona*, the ninth hour, and AS. *scencan*, to pour out drink; Dut. *schénken*, to pour out; Icel. *skenkja*, to serve drink]: in *OE.*, a midday meal. *Note.*—The **NUNCHEON** or **NONESCHENCHE** signifies literally the 'noon-drink,' the latter part being derived from AS. *sceanc*, a shank; hence a hollow bone, or bone of the leg, a pipe that could be thrust into a cask to tap it or draw off the contained liquor; O. Dut. *schénkkan*, a pot with a pipe to pour out—see **Skeat**, also note under **LUNCH**.

NUNCIO—NUNQUAM INDEBITATUS.

NUNCIO, n. *nŭn'shĭ-ō* [It. *nunzio*; Sp. *nuncio*—from L. *nuntius* or *nuncius*, a messenger: F. *nonce*]: messenger, or one sent with announcement: specifically, one of the superior grade of ambassadors sent by the pope to foreign courts: see **LEGATE**. A nuncio is an ambassador to the court of an emperor or king. The ambassador to a republic, or to the court of a minor sovereign, is called **INTERNUNCIO**. **NUN'CIATURE**, n. *-ă-tŭr*, office of a nuncio.

NUNCUPATIVE, a. *nŭn-kŭ'pă-tĭv* [L. *nuncupātus*, called or named: It. *nuncupativo*; F. *nuncupatif*, nuncupative]: publicly; declaratory, existing only in name; nominal; verbal; not written; also **NUNCUPATORY**, a. *-pă-tĕr-ĭ*.—*Nuncupative Will*, will made by word of mouth. As a general rule, no will is valid unless in writing and signed by the testator; but in cases of soldiers and sailors, a verbal or nuncupative will is held to be good, on the ground that there is often no time to draw up a formal will in writing.

NUNEATON, *nŭn-ē'ton*: small market-town of England, county of Warwick, 18 m. n.e. of the town of Warwick. It contains a small parish church in Gothic; and its Free Grammar School was founded by Edward VI. 1553. Ribbons and cotton goods are manufactured. Pop. (1871) 7,000; (1881) 8,465; (1891) 11,580.

NUÑEZ CABEZA DE VACA, *nŏn'yĕth kă-bă'thă dă vă'kă*, **ALVARO**: about 1490-1564: chief officer under Narvaez, in the Spanish expedition to Florida 1527, which resulted in shipwreck and the death of Narvaez. N. escaped with a few followers, reached the mainland w. of the Mississippi, penetrated the interior, and, after friendly intercourse with the natives, reached the Spanish settlements on the Pacific coast 1536, after 8 years of wandering and hardship. Returning to Spain 1537, he was appointed *adelantado* of the province of the La Plata 1540. Shipwreck compelled him to go to Paraguay, which country he explored with 150 followers, leaving his ships to proceed to Buenos Ayres. He passed through the country of the Guaranís, and with their assistance descended the La Plata and reached Asuncion, which he made his headquarters, 1542, Mar. 15. He explored the country, subjugated several tribes, and at length, having aroused the jealousy of his lieut., Domingo de Irala, was accused by him, sent to Spain, and banished to Africa by the council of the Indies. The king recalled him 8 years afterward, pensioned him, and appointed him judge of the supreme court at Seville. A published account of his adventures was issued at Valladolid 1544, and has been frequently reprinted. It has also been translated into French and English. He died at Seville.

NUNQUAM INDEB'ITATUS [L. never indebted]: law term meaning, in an action for debt, a plea that the defendant never was indebted. By some recent codes, the defendant is no longer allowed to deny generally the facts alleged by the plaintiff.

NUPHAR—NURAGHE.

NUPHAR, *nû'fâr* : genus of yellow water-lilies : see **WATER-LILY**.

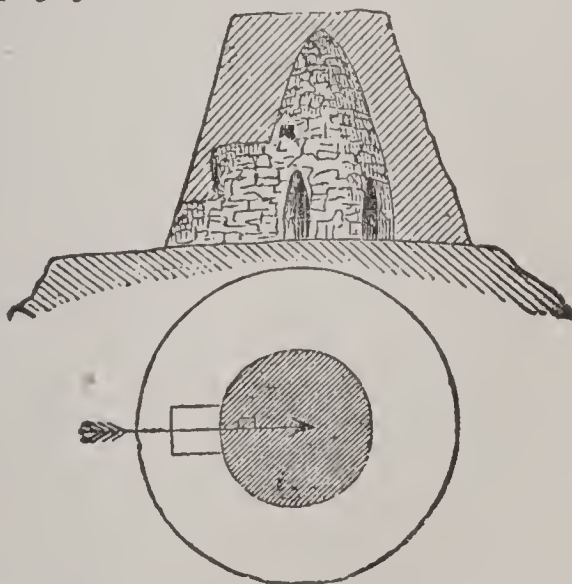
NUPTIAL, a. *nûp'shăl* [F. *nuptial*—from L. *nuptiālis*, belonging to a marriage—from *nuptiæ*, a wedding, a marriage—from *nupta*, a bride—from *nubĕrĕ*, to cover or veil, because a bride was veiled] : pert. to a marriage ; constituting marriage. **NUP'TIALLY**, ad. -*ly*. **NUPTIALS**, n. plu. *nûp'shălz*, marriage ; ceremony of marriage.

NURAGHE, *nû-râ'gĭ*, or **NURHAG**, *nû-râg'* : structure of conical shape, rising 30 or 40 ft. above the ground,



View of the Nuraghe of Goni, in Sardinia.

with two or three stories of domed chambers connected by a spiral staircase. They are peculiar to the island of Sardin'a. Some are raised on basements of masonry or platforms of earth. They are made of granite limestone, basalt, porphyry, sandstone, and schist. Their entrances



Plan and Elevation of the Nuraghe of Goni, in Sardinia.

are small and low ; and when they have chambers of two stories, the upper chamber is reached by the spiral staircase, which has loopholes to admit the light. The

NUREDDIN—NURNBERG.

tops are supposed to have had a terrace. Although 3,000 of them remain in Sardinia, none are perfect. Their masonry is irregular, but not polygonal, and resembles the style of work called Asiatic. Like the round towers of Ireland, and other uninscribed monuments, their object and antiquity are unknown. They have been supposed to be the work of the Pelasgi, the Phœnicians, or the Carthaginians, and to have been ancient sepulchres, *Tholi* or *Dædalia*, constructed in heroic times. Skeletons, and paraphernalia belonging to graves or funerals, have been found in them. They have many points of resemblance to the 'Burghs' or 'Duns' on the n. shores of Scotland—e.g., the Burgh of Mousa, in Shetland.—De la Marmora, *Voyage en Sardaigne*, tom. ii.; Petit Radet, *Nuraghes* (Paris 1828); Dennis, *Cities and Cem. of Etruria*.

NUREDDIN': see NOUREDDIN-MAHMOUD.

NÜRNBERG, *nürn' bërçh*, or NUREMBERG, *nū'rém-bèrg* (*Norimberga*, *Norica*): city of the Bavarian province of Middle Franconia; in a sandy but well-cultivated district on the Pegnitz river (ultimately joining the Main). N. is one of the most remarkable and interesting cities of Germany, on account of its numerous remains of mediæval architecture in its picturesque streets, with their gabled houses, stone balconies, and quaint carvings. No city retains a stronger impress of the characteristics which distinguished the wealthy burgher classes in the middle ages, while its double lines of fortified walls, separated from each other by public walks and gardens, and guarded by 70 towers, together with the numerous bridges which span the Pegnitz, on whose banks the city is built, give it distinctive features of its own. Among the most remarkable of its numerous public buildings are: the old palace or castle, commanding, from its high position, a glorious view of the surrounding country, and interesting for its antiquity, and for its gallery of paintings, rich in gems of early German art; the town-hall, which ranks among the noblest of its kind in Germany, and is adorned with works of Albert Dürer and Gabriel Weyer; the noble Gothic fountain opposite the cathedral, by Schonhofer, with its numerous groups of figures, beautifully restored in modern times; and many other fountains deserving notice. Of the numerous churches of N., the following are the most remarkable: St. Lawrence, built 1270–1478, with its beautiful painted-glass windows, its noble towers and doorway, the celebrated stone pyx, or ciborium, 65 ft. high, completed 1500, by Adam Krafft, after five years' assiduous labor, and the exquisite wood-carvings of Veit Stoss; St. Sebald's, with its numerous fine glass-paintings and frescoes by Peter Vischer and other German masters; the cathedral, or Our Lady's, built 1631, similarly enriched. N. is well provided with educational establishments, and, besides a good gymnasium and polytechnic institution, has schools of art, normal and other training col-

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leges, a public library of 50,000 vols., galleries of art collections, museums, etc.; while the numerous institutions of benevolence are liberally endowed and well maintained. Although the glory of the foreign commerce of N. has long since passed away, its home trade is still of considerable importance, including the specialties of metal, wood and bone carvings, and children's toys and dolls, which find ready sale in every part of Europe, and are largely exported to America and the East. It is the seat also of a large transfer and exchange business, which owes much of its importance to the facilities of intercommunication afforded by the network of railway lines with which the city is connected.

N. was raised to the rank of a free imperial city by Emperor Frederick II., 1219, 21 years before which date Henry VI. is falsely said to have ennobled 38 of the burgher families, who forthwith arrogated supreme power over the N. territory. In the 13th c., we find it under the title of a burggraviate in the hands of the Hohenzollern family, who, 1417, ceded for a sum of money all their territorial and manorial rights to the magistracy of the city. This measure put a stop to the feuds which had raged between the burggrafs and the municipality; and for a time N. continued to grow rich with the fruits of the great internal trade, which it had long maintained between the traders of the East and the other European marts of commerce. The discovery of the passage by the Cape of Good Hope, by opening new channels of communication between Asia and Europe, deprived N. of its ancient monopoly. The Thirty Years' War completed the decay of the city, which suffered severely from both parties in turn. The ancient reputation of N. as a wealthy and loyal city of Germany secured to it, however, special consideration; and when the imperial commissioners reorganized some of the dismembered parts of the old empire, 1803, it was allowed to retain its independence, with a territory of 483 sq. m., containing 40,000 inhabitants, and drawing a revenue of 800,000 gulden; but in consequence of the disputes in which the free city became involved with the king of Prussia, who had some hereditary claim on the ancient burggraviate, N., alarmed at the prospect of still greater embarrassments, entered into the Rhenish confederation, and, as the result of this alliance, was transferred, 1806, with the surrender of its entire domain and all rights of sovereignty, to the king of Bavaria.—Pop., mostly Prot. (1831), 99,519; with suburbs 103,677; (1890) 142,590; (1900) 261,081.

NURSE—NURSERY.

NURSE, *n.* *něrs* [OF. *norrice* and *nurrice*; F. *nourrice*, a nurse; *nourrissant*, nursing—from L. *nutricem*, a nurse—from L. *nutrĭō*, I suckle or feed young]: a woman who has the care of infants or young children; a woman who suckles the infant of another—familiarily called a wet-nurse; one having the care of a sick person; he or that which cherishes or promotes; state of being nursed: *V.* to suckle; to nourish at the breast, as an infant; to attend and take care of in sickness; to cherish; to manage with care and economy. **NURS'ING**, *imp.* **NURSED**, *pp.* *něrst*. **NURS'ER**, *n.* *-ěr*, one who nurses. **NURSERY**, *n.* *něrs'ěr-ĭ*, the apartment in a house set apart for the young children: ground for the rearing of plants (see below); the place where anything is fostered and promoted. **NURSERYMAN**, *n.* one who rears plants in ground set apart for the purpose. **NURS'LING**, *n.* *-lĭng*, an infant; a foundling. **NURSERY TALES**, fairy-stories and small books of fiction that form the old and popular literature of childhood.

NURSE, MILITARY: trained attendant on soldiers in hospitals. In armies of continental Europe, the 'sisters of charity' usually carry their mission of mercy into the military hospitals. In Prot. countries, in part, the soldiers have been dependent on the regular male hospital attendants for their care during sickness, or when suffering from wounds. The Crimean campaign, however, disclosed so melancholy a picture of the want of women's co-operation, that a band of self-sacrificing ladies, headed by Miss Nightingale (*q.v.*), proceeded to Turkey, and were soon acknowledged as messengers of health and life by the unfortunate wounded. The example thus set has not been without effect. In the Franco-German war of 1870-1, also in the Russo-Turkish war of 1877-8, lady-nurses of various nations ministered in all the military hospitals.—See **NURSES, TRAINING OF**.

NURS'ERY: place in which fruit-trees and shrubs are propagated for transplanting. The soil should be dry or thoroughly drained, in a good state of fertility, and deeply plowed, and the subsoil loosened, but not brought to the surface. Plants are procured from layers, cuttings, or seeds. The quince, grape, and gooseberry, and Doucin and Paradise apples, are readily propagated by layers. The wood of the preceding year's growth can be used in spring, or that of the current year in July or Aug. The branch to be layered is cut partly through the wood, near the base of a bud, and split 2 or 3 in. toward the end of the shoot. The ground having been pulverized, the branch, with the cut spread, is placed thereon, fastened down, and covered with 3 in. of earth. Long vines may be treated at several different points. A more rapid method with the quince, and the Doucin and Paradise apples, is cutting off the stock near the ground in spring, covering it with earth in the autumn, and the next autumn removing the numerous shoots which have appeared. A cutting is a portion of a shoot,

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It should be taken from well-matured wood of the current season's growth, 2 to 12 in. in length, and be cut close to a bud at each end. Cuttings from a point near the old wood are better than those from the tips of shoots. They are made in autumn, kept in earth during winter, and planted very early in the spring. They are set 3 to 12 in. apart in trenches, with one bud above-ground in case of the grape, and 2 buds with other plants, and the earth firmly packed around their bases. Apple, pear, and stone-fruit trees are grown principally from seeds. Those of the apple are obtained from a cider-mill or from decayed fruit. They are cleaned, and the light seeds removed by washing. The seeds are dried, placed in boxes with slightly moist sand, and planted in rows 3 ft. apart as soon as the ground is dry in spring. Pear-seeds may be obtained from decayed fruit, but are largely imported from Europe, as the plants thus obtained are considered more hardy than those from American seed. Cherry, plum, and peach seeds are obtained from ripened fruit, freed from the pulp, washed, and packed in boxes with layers of sand. Peach-stones are sometimes cracked, and the seeds sprouted before planting. When one year old, plants which have been started in the nursery are to be taken up, the roots packed closely in dry soil, and the tops covered so as to protect from frost. Before they are set in spring, the roots should be trimmed and the tops shortened. Rows should be 3 ft. apart, and plants from 1 to 3 ft. in the row, according to the variety and the length of time that they are to remain. The apple plants are usually root-grafted in winter; but other species of trees grown in the nursery are budded usually the first or second summer after transplanting. The currant is readily propagated by cuttings; the red raspberry and blackberry by shoots called suckers—but better plants are obtained from root-cuttings; and the blackcap raspberry by covering the tips of the plants in the ground. The land must be frequently cultivated and kept free from weeds, and the trees will need careful pruning and close attention as long as they remain in the nursery.

NURS'ES, TRAINING OF: one of the great humanitarian movements of modern times. In France, members of Rom. Cath. sisterhoods have been noted for hospital service; and in Germany the Institute of Deaconesses gave instruction to those who wished to become nurses, and in 1836 sent out Florence Nightingale (q.v.) from her English home to her noble work for humanity. Soon after the close of the Crimean war, schools for training nurses were established in England and Russia, and have since been founded in other countries. The first movement of the kind in the United States is supposed to have been made by Dr. Valentine Seaman, of the New York Hospital, who delivered a course of 26 lectures on subjects pertaining to nursing, which were published in book form 1800. A 'Nurse Society' was formed 1838 by Friends in Philadelphia. The Rom. Cath. sisterhoods

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were active, the Lutheran churches followed, and on the foundation of St. Luke's Hospital, New York, 1853, the Prot. Episc. denomination took up the work, which has been followed by other branches of the church and by institutions outside of sectarian, or even religious, lines. There are (1890) about 30 large training schools for nurses in the United States. New York has six, and many of the large cities in various parts of the country are represented by one or more of these schools in connection with their hospital service. Details vary somewhat in different schools, but in general the intending pupils must be between the ages of 21 and 35 years, of good character, sound health, and at least fair mental capacity and attainments. They are taken on a probation of two months, during which period they furnish their own clothes, but are boarded at the expense of the institution. Those who appear competent, and who desire to remain, contract to serve for two years, and to abide by the rules of the school and hospital. In addition to board and lodging, and care during sickness, a monthly salary of about 7 dollars for the first year and 12 dollars for the second year is paid. The pupils are lodged in a building separate from the hospital. With the exception of an hour at noon for dinner, and time for exercise and rest, their hours of duty are from 8 A.M. to 8 P.M. They are on duty but half the day Sunday, have one free afternoon each week, and are allowed a vacation of two weeks during the year. The course includes lectures on a large number of practical topics, such as respiration, temperature, circulation of the blood, fevers, and the diseases of children. The pupils are taught also the most approved methods of heating, ventilating, and disinfecting rooms; are shown when and how to use friction, how to make and apply poultices and bandages, to dress wounds and treat accidental injuries, to care for helpless patients; and are taught the various ways of promoting the comfort and facilitating the recovery of the sick. The pupils are trained to observe carefully and to record accurately the condition of the patient, and in various other ways to render aid to the physician. The lectures and teaching are given by the hospital physicians, surgeons, and other officers; the responsibilities of the position are clearly set forth, together with the confidential relation which must exist between the nurse and the employer; and the pupils are urged to adopt a strict professional code. There are regular recitations and reviews, and, at the end of the two years, diplomas are given to all who satisfactorily pass the final examinations. In cases of severe sickness, the well-trained and faithful nurse is recognized as not only bringing great relief from the strain on kindred and friends, but as greatly supplementing the physician's efforts for the patient's recovery.

NUR SIA: see SABINES.

NURTURE—NUT.

NURTURE, n. *nēr'tūr* or *-chûr* [OF. *noriture*; F. *nouriture*, food—from L. *nutrītūra*, about to nourish—from L. *nutriō*, I suckle or feed young]: that which nourishes; anything which promotes growth; food; diet; education; instruction: V. to feed; to educate; to train up. **NUR'TURING**, imp. **NURTURED**, pp. *nēr'tûrd* or *-chûrd*.—**SYN.** of 'nurture, v.': to cherish; nourish; nurse; tend; bring up.

NUSAIRIEH: see **NOSSAIRIANS**.

NUT, n. *nŭt* [AS. *hnut*; Dut. *noot*; Icel. *hnót*; Ger. *nuss*; Gael. *cnudh*; L. *nux*, a nut]: a fruit consisting of a kernel inclosed in a hard shell; in *bot.*, a bony pericarp containing a single seed, to which it is not closely attached (see below): a piece of metal grooved for screwing on to the end of a bolt: V. to gather nuts. **NUT'TING**, imp.: **ADJ.** pert. to gathering nuts: N. act of gathering nuts. **NUT'TED**, a. supplied with a nut. **NUT'TY**, a. *-tī*, abounding in nuts; resembling a nut in flavor, as wine. **NUT-BROWN**, of the color of a nut. **NUT-CRACKER**, instrument for breaking nuts: a bird (see below). **NUT-GALL**, the acorn or nut of the oak (see **GALL**, or **GALL-NUT**). **NUT-HATCH**, **NUT-PECKER**, birds (see **NUT-HATCH**, below). **NUT'SHELL**, hard substance inclosing the kernel of the nut: anything of little value or of small compass. **NUT-HOOK**, in *OE.*, hooked stick for pulling down boughs with nuts on them: an officer of justice; a bailiff. **NUT TO CRACK**, a puzzle to be found out; a problem to be solved.

NUT: in popular language, any fruit which has the seed inclosed in a bony, woody, or leathery pericarp, not opening when ripe. Among the best-known nuts are the Hazel-nut, Brazil-nut, Walnut, Chestnut, and Cocoa-nut, all edible. Other nuts are used in medicine and in the arts. Some of the edible nuts abound in a bland oil, used for various purposes.—In botany, the term nut (*nux*) designates a one-celled fruit, with a hardened pericarp, containing, when mature, only one seed. The *Achene* (q.v.) was by the older botanists generally included in this term. The hazel-nut is an excellent example of the true nut of botanists.—The name nut, without distinctive prefix, is popularly given in Britain to the hazel-nut, but in many parts of Europe to the walnut; in some parts of the United States to the walnut, in others to the chestnut; etc.

Many nuts have considerable commercial value, as favorite articles of food: these are the Hazel-nut and its varieties, the Black Spanish, the Barcelona, the Smyrna, the Jerusalem filbert, and the common filbert; the Walnut, Chestnut, Hickory, and Pecan; the Souari, the Cocoa or Coker nut, and the Brazil or Para nut. Hazel-nuts are exported from the shores of the Black Sea; chestnuts from Leghorn, Naples, Spain, France, and Portugal; Brazil-nuts from Para and Maranham. The value of all nuts imported into Great Britain for use as fruit, 1880, was stated at about \$2,500,000.

NUTANT—NUTATION.

NUTANT, a. *nū'tānt* [L. *nutans* or *nutan'tem*, nodding or wagging the head; *nutatiōnem*, a nodding]: nodding; having the top bent downward. **NUTA'TION**, n. *-tā'shūn* [F.—L.]: a vibratory movement of the earth's axis, by which the pole describes a small ellipse every 19 years (see below): a constant and involuntary movement of the head in one or more directions; in *bot.*, the curvature in an organ of a plant, produced by the unequal growth of different sides.

NUTA'TION, in Astronomy: slight oscillatory movement of the earth's axis, which disturbs the otherwise circular path described by the pole of the earth round that of the ecliptic, known as the 'precession of the equinoxes.' It is produced by the same causes—viz., attraction by the sun, moon, and planets (the attraction of the last mentioned being so small as to be quite imperceptible) on the bulging zone about the earth's equator, though in this case it is the moon alone that is the effective agent. It also, for reasons which need not be given here, depends, for the most part, not on the position of the moon in her orbit, but of the moon's node. If there were no precession of the equinoxes, N. would appear as a small elliptical motion of the earth's axis, performed in the same time as the moon's nodes take to complete a revolution, the axes of the ellipse being respectively $18''\cdot5$ and $13''\cdot7$, the longer axis being directed toward



the pole of the ecliptic. But this motion, when combined with the more rapid one of precession, causes the pole of the earth's axis to describe a wavy line round P, the pole of the ecliptic.

The effect of N., when referred to the equator and ecliptic, is to produce a periodical change in the obliquity of the ecliptic, and in the velocity of retrogradation of the equinoctial points. It thus gives rise to the distinction of 'apparent' from 'mean' right ascension and declination, the former involving, and the latter being freed from, the fluctuations arising from N. This motion is common to all the planets.

NUT-CRACKER—NUT-HATCH.

NUT-CRACKER (*Nucifraga* or *Caryocatactes*): genus of birds of family *Corvidæ*, with a straight conical bill, both mandibles terminating in an obtuse point, and tail nearly square at the end. The form and characters are nearly similar to those of crows, but the habits are rather those of jays, and were formerly thought to indicate an approach to woodpeckers. One species (*N. caryocatactes*



Nut-cracker (*Nucifraga caryocatactes*).

or *C. nucifraga*) is occasionally seen in Britain, and is not uncommon in many parts of Europe and Asia, particularly in mountainous regions covered with pines. It is about the size of a jackdaw, but has a longer tail. The plumage is light brown, speckled with white, except on the wings, rump, and tail, which are nearly black. The *N.* frequents the tops of high pines, and is a shy bird. Its bill can be used with much force and ingenuity, but it is not known to have the power of cracking nuts.

NUT-HATCH (*Sitta*): genus of birds of family *Certhiadae*, or, according to some writers, *Paridae*, having a straight conical or prismatic bill, short legs, the hind toe very strong. They run up and down trees with great agility, moving with equal ease in either direction, and without hopping, so that the motion is rather that of a mouse than of a bird. They feed on insects, in pursuit of which they examine the crevices and remove the scales of the bark; also on seeds, as those of pines, and the kernels of nuts, to obtain which they fasten the nut firmly in some crevice of bark or other such situation, and peck at it until the shell is broken, so placing themselves that they sway not merely the head, but the whole body, to give force to the stroke. The English name is said to have been originally *Nut-hack*.—One species, the **EUROPEAN N.** (*S. Europaea*), is common in most parts of Europe, and is found in most of the wooded districts of England. Its whole length is about six inches. If taken young, it is easily tamed, and becomes very familiar and amusing; but an old bird caught and put into a cage is apt to kill itself by violently pecking

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to force a way out. It soon destroys the wood of a cage.—Other species are found in the East; and in N. America the genus is particularly abundant, *S. cana-*



European Nut-hatch (*Sitta Europæa*).

densis being the red-bellied N; *S. carolinensis* the white-bellied, with the slender-billed var. w; *S. pusilla* the brown-headed of the s.; and *S. pygmæa* far west.

NUTMEG, n. nŭt'mĕg [OF. *noix muguette*; late L. *nux moschātā*, nutmeg—from OF. *muge*, musk: L. *muscus*; Gr. *moschos*, musk, the musk being taken as the type of anything highly scented]: aromatic kernel—consisting mostly of the albumen—of the fruit of several species of *Myristica*. This genus belongs to a nat. order of exogens, *Myristicaceæ*, which contains about 40 species, all tropical trees or shrubs, natives of Asia, Madagascar, and America. They generally have red juice, or a juice which becomes red on exposure to air. The order is allied to *Lauraceæ*. The leaves are alternate and without stipules. The flowers are unisexual, the perianth generally trifold, the filaments united into a column. The fruit is succulent, yet opens, like a capsule, by two valves. The seed is nut-like, covered with a lacinated fleshy aril, and has an albumen penetrated by its membranous covering. The species of this order are generally more or less aromatic in all their parts; their juice is styptic and somewhat acid; the albumen and aril contain both a fixed and an essential oil, and those of some species are used as spices. The genus *Myristica* has the anthers united in a cylindrical column, and the cotyledons folded. The species which furnishes the greater part of the nutmegs of commerce is *M. fragrans* or *moschata*; but the long N. (*M. fatua*), from the Banda Isles, is now frequent in western markets. The common N.-tree is about 25 ft. in height, with oblong leaves and axillary few-flowered racemes; the fruit is of the size and appearance of a roundish pear, golden yellow in color when ripe. The fleshy part of the fruit is rather

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hard, and is of peculiar consistence, resembling candied fruit; it is often preserved and eaten as a sweetmeat. Within is the nut, enveloped in the curious yellowish-red aril, the *Mace* (q.v.), under which is a thin, shining brown shell, slightly grooved by the pressure of the mace, and within is the kernel or nutmeg. Up to 1796, the Dutch, being the possessors of the Banda Isles, jealously prevented the N. from being carried in a living state to any other place; but during the conquest and retention of the islands by the British, care was taken to spread the culture of this valuable spice, and plants were sent to Penang, India, and other places, where they are now successfully cultivated; indeed, they have now become established in the W. India Islands, and both Jamaica and Trinidad produce excellent nutmegs. Brazil also is found favorable to their culture. The N. is very liable to the destructive attack of a beetle, and it is a common practice to protect the nuts with a coating of lime before shipping them for export. The Dutch or Batavian nutmegs are nearly always limed; but those from Penang are not, and are consequently of a greater value. The N. yields, by expression, a peculiar yellow fat, called oil of mace, because, from its color and flavor, it was generally supposed to be derived from mace; and by distillation is obtained an almost colorless essential oil, which has very fully the flavor of the nutmeg. Her own settlements now furnish Great Britain with the greater portion of this spice, but some lots of Batavian also come into the market. The quantity imported may be stated as 300,000 pounds weight, worth, in round numbers, \$350,000.

Nutmegs are used chiefly as a spice, but medicinally they are stimulant and carminative. They possess narcotic properties, and in large doses produce stupefaction and delirium, so that they ought not to be used where affections of the brain exist or are apprehended.

Other species of *Myristica*, besides those above named, yield nutmegs sometimes used, but of very inferior quality.—The fruits of several species of *Lauraceæ* also resemble nutmegs in aromatic and other properties—e.g., the cotyledons of *Nectandra Puchury*, the Pichurim Beans of commerce, and the fruit of *Acrodictidium camara*, a tree of Guiana, the Camara or Aekawai nutmeg. The clove nutmegs of Madagascar are the fruit of *Agathophyllum aromaticum*, and the Brazilian nutmegs of *Cryptocarya moschata*. All these belong to the order *Lauraceæ*. The Calabash N. is the fruit of *Monodora myristica*, of the natural order *Anonaceæ*. NUT'MEGGED, a. -mēgd, seasoned with nutmeg. NUT'MEGGY, a. -mēg-gī, having the character of a nutmeg.

NUTRIA, n. nū'trī-ă [Sp. *nutria*, an otter]: the commercial name given to the skin or fur of the coypu, a rodent quadruped about the size and shape of the beaver; see COYPU: RACOONDA.

NUTRIENT—NUTRITION.

NUTRIENT, a. *nū'trī-ēnt* [L. *nutriens* or *nutriēn'tem*, nourishing—from *nutriō*, I nurse or nourish]: nourishing; nutritious: **N.** anything nourishing or nutritious. **NUTRIENT RATIO**, a number expressing the comparative value of feeding-stuffs for cattle, meadow-hay being reckoned 1. **NU'TRIMENT**, n. *-mēnt* [L. *nutrimen'tum*, nourishment]: food; that which nourishes. **NU'TRIMENTAL**, a. *-mēn'tāl*, nutritious; having the quality of food. **NUTRITIOUS**, a. *nū-trīsh'ūs* [L. *nutritiūs*, that nourishes]: having the quality of nourishing; promoting the growth or repairing the waste of animal bodies. **NUTRI'TIOUSLY**, ad. *-lī*. **NUTRITION**, n. *nū-trīsh'ūn* [F.—L.]: that which nourishes; the act or process of promoting growth or repairing waste in animal or vegetable bodies (see below). **NUTRITIVE**, a. *nū.trī-tīv* [F. *nutritif*]: having the quality of nourishing. **NU'TRITIVELY**, ad. *-lī*.

NUTRI'TION: process of repairing waste and promoting growth and development in living bodies. The blood carried by the capillaries to the several tissues of the body is the source whence all the organs derive their materials of growth and development; and it is found that there is direct proportion between the vascularity of any part and the activity of the nutrient operations which take place in it. Thus, in nervous tissue and muscle, in mucous membrane and in skin, a rapid decay and renovation of tissue are constantly going on, and these are parts in which the capillaries are most abundant; while in cartilage and bone, tendon and ligament, the disintegration of tissue is comparatively slow, and the capillaries are much less abundant. Each elementary cell or particle of a tissue seems to have a sort of gland-like power not only of attracting materials from the blood, but of causing them to assume its structure and participate in its properties. Thus, from the same common source, nerves form nervous tissue, muscles muscular substance; and even morbid growths, such as cancer, have an assimilating power.

Before entering further into the subject of **N.**, it is necessary to understand how it differs from the allied processes of development and growth. All these processes are the results of the plastic or assimilative force by which living bodies are able to form themselves from dissimilar materials (as when an animal subsists on vegetables, or when a plant grows by appropriating the elements of water, carbonic acid, and ammonia); but they are the results of this force acting under different conditions.

Development is the process by which each tissue or organ of a living body is first formed, or by which one, already incompletely formed, is so changed in shape and composition as to be fitted for a function of a higher kind, or finally is advanced to the state in which it exists in the most perfect condition of the species.

Growth, which commonly concurs with development and continues after it, is properly mere increase of a

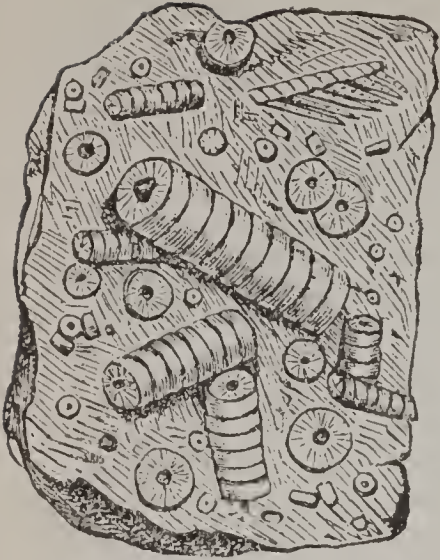
NUTRITION.

part by the insertion or superaddition of materials similar to those of which it already consists. In growth, properly so called, no change of form or composition occurs; parts only increase in weight, and usually in size; and if they acquire more power, it is only more power of the same kind as that which they before enjoyed.

Nutrition, on the other hand, is the process by which the various parts are maintained in the same general conditions, of form, size, and composition, which they have already by development and growth attained. It is by this process that an adult person in health maintains for a considerable number of years the same general outline of features, and nearly the same size and weight, though during all this time the several tissues of his body are undergoing perpetual decay and renovation. In many parts, this removal and renewal of the particles is evident. In the glands—the Kidneys (q.v.), for example—the cells of which they are mainly composed are being constantly cast off; yet each gland maintains its form and proper composition, because for every cell that is thrown off a new one is produced. In the epidermis of the skin, a similar process is perpetually going on before our eyes. In the muscles, a similar change may be readily traced, for, within certain limits, an increased amount of exercise is directly followed by an increased excretion of the ordinary products of the decomposition of the nitrogenous tissues—viz., urea, carbonic acid, and water. Again, after prolonged mental exertion, there is often marked increase in the amount of alkaline phosphates in the urine, which seems to show that in these cases there is an excessive oxidation of the phosphorus of the brain. And yet, in consequence of the activity of the reparative process, neither the muscles nor the brain diminish in size.

It may be regarded as an established fact in physiology, that every particle of the body is formed for a certain period of existence in the ordinary conditions of active life, at the end of which period, if not previously destroyed by excessive exercise, it is absorbed or dies, and is cast off. (The hair and the deciduous or milk teeth afford good illustrations of this law.) The less a part is exercised, the longer its component particles appear to live. Thus, Mr. Paget found that, if the general development of the tadpole be retarded by keeping it in a cold, dark place, and if hereby the functions of the blood corpuscles be slowly and imperfectly discharged, the animal will retain its embryonic state for several weeks longer than usual, and the development of the second set of corpuscles will be proportionally postponed, while the individual life of the corpuscles of the first set will be, by the same time, prolonged.

For due performance of the function of N., certain conditions are necessary, of which the most important are—1, a right state and composition of the blood, from which the materials of nutrition are derived; 2, a regu-



Nummulite Limestone.



Nymphaea Lotos (Egyptian
Water-lily).



Oak (*Quercus robur*).



Oriental Gall Oak (*Q. infectoria*)
and Gall-fly.



Obcordate Leaf.



Oast.

lar and not distant supply of such blood; 3, a certain influence of the nervous system; and 4, a natural state of the part to be nourished.

1. There must be, peculiar to each individual, a certain adaptation between the blood and the tissues. Such an adaptation is determined in its first formation, and is maintained in the concurrent development and increase of both blood and tissues. This maintenance of the sameness of the blood is well illustrated by the action of vaccine matter. By the insertion of the most minute portion of the virus into the system, the blood undergoes an alteration which, although it must be inconceivably slight, is maintained for several years; for, even very long after a successful vaccination, a second insertion of the virus may have no effect, because the new blood formed after the vaccination continues to be made similar to the blood as altered by the vaccine matter. So, in all probability, are maintained the morbid states of the blood which exist in syphilis and many other chronic diseases; the blood, once inoculated, retaining for years the taint which it once received. The power of assimilation which the blood exercises in these cases is exactly comparable with that of maintenance by nutrition in the tissues; and evidence of the adaptation between the blood and the tissues, and of the delicacy of the adjustment by which it is maintained, is afforded by the phenomena of symmetrical diseases (especially of the skin and bones), in which, in consequence of some morbid condition of the blood, a change of structure affects in an exactly similar way the precisely corresponding parts on the two sides of the body, and no other parts of even the same tissue. These phenomena (of which numerous examples are given in two papers by Dr. W. Budd and Mr. Paget, *Medico-chirurgical Transactions*, xxv.) can be explained only on the assumption, 1st, of the complete and peculiar identity in composition in corresponding parts of opposite sides of the body; 2d, of so precise and complete an adaptation between the blood and the several parts of each tissue, that a morbid material, being present in the blood, may destroy its fitness for the N. of one or two portions of a tissue, without affecting its fitness for the maintenance of the other portions of the same tissue. If, then, the blood can be fit for the maintenance of one part and unfit for the maintenance of another part of the same tissue (as the skin or bone), how precise must be that adaptation of the blood to the whole body, by which in health it is always capable of maintaining all the different parts of the numerous organs and tissues in a state of integrity.

2. The necessity of an adequate supply of appropriate blood in or near the part to be nourished is shown in the frequent examples of atrophy of parts to which too little blood is sent, of mortification when the supply of blood is entirely cut off, and of defective N. when the blood is stagnant in a part. The blood-vessels themselves take no share in the process, except as the carri-

ers of the nutritive matter; and provided they come so near that the latter may pass by imbibition, it is comparatively unimportant whether they ramify within the substance of the tissue or (as in the case of the non-vascular tissues, such as the epidermis, cornea, etc.) are distributed only over its surface or border.

3. Numerous cases of various kinds might be readily adduced to prove that a certain influence of the nervous system is essential to healthy N. Injuries of the spinal cord are frequently followed by mortification of portions of the paralyzed parts; and both experiments and clinical cases show that the repair of injuries takes place less completely in parts paralyzed by lesion of the spinal cord than in ordinary cases. Division of the trunk of the trifacial nerve has been followed by incomplete N. of the corresponding side of the face, and ulceration of the cornea is a frequent consequence of the operation.

4. The fourth condition is so obvious as to require no special illustration.

For further information on this most important department of physiology, see Sir James Paget's *Surgical Pathology*, or his lectures on Nutrition, Hypertrophy, and Atrophy; Kirkes's *Handbook of Physiology* (from which is drawn much in this article); Foster's *Textbook of Physiology*; or the works on Physiology by Carpenter, Huxley, Flower, Draper, and Marshall.—See DIGESTION: CIRCULATION: SECRETION: LYMPH: LYMPHATICS: DIET: FOOD AND DRINK.

NUTTALL, *nŭt'al*, THOMAS: 1786–1859, Sep. 10; b. Settle, Yorkshire, England. He learned printing in England, but, coming to the United States at the age of 22, took up the study of natural history, and occupied the remainder of his life in scientific pursuits. He was interested especially in botany and ornithology, and his investigations covered a wide field. He travelled through nearly every state in the Union, explored rivers and the great lakes, and from the Pacific coast sailed to the Sandwich Islands. 1822–28 he was curator of the botanical gardens and lecturer on natural history in Harvard Univ. It is believed that no other student of the botany of North America has made more discoveries, and that no writer on American plants, except Prof. Asa Gray, has described more new genera and species. He returned to England 1842, having inherited an estate the previous year. He died in St. Helen's, Lancashire.

NUX VOMICA.

NUX VOMICA, n. *nŭks' vŏm'ŭ-kă* [L. *nux*, all fruits that have a hard shell; *vomĭcus*, pertaining to vomiting—from *vomĕrĕ*, to vomit]: the vomit nut; the fruit of the East Indian *Strychnos*, yielding the now well-known deadly poison strychnia, ord. *Loganiacĕæ*: a medicinal preparation made from it. The following are the characters of these seeds, which are imported from the E. Indies: 'Nearly circular and flat, about an inch in diameter, umbilicated and slightly convex on one side, externally of an ash-gray color, thickly covered with short satiny hairs, internally translucent, tough and horny, taste intensely bitter, inodorous.'—*The British Pharmacopœia*, p. 99.

For the genuine characters, see the article STRYCHNOS. —The N. V. tree is a native of Coromandel, Ceylon, and other parts of the E. Indies. It is of moderate size, with roundish-oblong, stalked, smooth leaves, and terminal corymbs. The fruit is a globular berry, about as large as



Nux Vomica:
Branchlet, Leaves, and Flowers.

a small orange, one-celled, with brittle shell, and several seeds lodged in a white gelatinous pulp.—The bark is known as *False Angostura Bark*, having been confounded with *Angostura Bark*, through a commercial fraud, about the beginning of the present c.; but its properties are very different, as it is very poisonous.

The seeds contain (in addition to inert matters, such as gum, starch, woody fibre, etc.) three alkaloids closely related to each other, which act as powerful poisons on the animal frame, and speedily occasion violent tetanic convulsions and death. These alkaloids or bases are named *Strychnia*, *Brucia*, and *Igasuria*, and exist in the seeds in combination with lactic and strychnic (or igasuric) acid. For a good method of obtaining pure strychnia,

NUX VOMICA.

which is by far the most important of the three bases, see *The British Pharmacopœia*, p. 328.

Strychnia ($C_{21}H_{22}N_2O_2$) occurs 'in right square octahedrons or prisms, colorless and inodorous, scarcely soluble in water, but easily soluble in boiling rectified spirit, in ether, and in chloroform. Pure sulphuric acid forms with it a colorless solution, which, on the addition of bichromate of potash, acquires an intensely violet hue, speedily passing through red to yellow.'—*Op. cit.* In nitric acid, it ought, if pure, to form a colorless solution; if the solution is reddish, it is a sign that brucia also is present. Strychnia combines with numerous acids, and forms well-marked salts amenable to the same tests as the base itself.

Brucia ($C_{23}H_{26}N_2O_4$) is insoluble in ether, but more soluble in water and in strong alcohol than strychnia; and it is the most abundant of the three alkaloids in nux vomica. It acts on the animal economy similarly to, but much less actively than strychnia, from which it may be distinguished not only by its different solubility, but by the red color which is imparted to it by nitric acid, and which changes to a fine violet on the addition of protochloride of tin. Like strychnia, it forms numerous salts.

Igasuria seems closely to resemble brucia in most respects. Little is known regarding *Igasuric Acid*.

Strychnia, brucia, and igasuria occur not only in nux vomica but in the seeds of *Strychnos ignatii* (St. Ignatius's beans), and in the seeds and other parts of several plants of the genus *Strychnos*. The amount of strychnia present in these substances varies from 0.5 to 1.5 per cent.

N. V., according to the experiments of Marcet, acts on vegetables as a poison. His experiments were, however, confined to the haricot bean and the lilac. It is poisonous in a greater or lesser degree to most animals, though larger quantities are required to kill herbivorous than carnivorous animals. Thus, a few grains will kill a dog, but some ounces are required to kill a horse. It is believed, however, that the bird called *Buceros Rhinoceros* eats the nuts with impunity; and a peculiar kind of *Acarus* lives and thrives in the extract of the nuts. Dr. Pereira describes three degrees of the operation of this substance on man. 1. In very small doses, its effects are tonic and diuretic, and often slightly aperient. 2. In larger doses, there is a disordered state of the muscular system; the limbs tremble; a slight rigidity or stiffness is felt when an attempt is made to put the muscles in action; and the patient experiences a difficulty in keeping the erect posture. If the use of the medicine be continued, these effects increase in intensity, and the voluntary muscles are thrown into a convulsed state by very slight causes, as, for example, by inspiring more deeply than usual, or even by turning in bed. It is remarkable that in paralysis the effects are most marked in the paralyzed parts. 3. In poisonous doses, the symptoms are tetanus and asphyxia, followed by death. It is difficult to say what is the smallest dose that would prove fatal to an adult: 30 grains of the powdered nuts, given by mistake

NUZZLE—NYAM-NYAM.

to a patient, have destroyed life; and three grains of the extract have proved fatal.

The preparations of N. V. are the powdered nuts, the extracts, the tincture, and strychnia; the alkaloid being usually preferable, because of its more constant strength. In various forms of paralysis, especially where there is no apparent lesion of structure, N. V. is a most successful remedy; though there are cases in which it is positively injurious. It is of service also in various affections of the stomach, such as dyspepsia, gastrodynia, and pyrosis. The average dose of the powder is two or three grains, gradually increased; that of the tincture, 10 or 15 minims; and that of the extract, half a grain, gradually increased to two or three grains; but this dangerous substance should never be used except under professional advice. See A. S. Taylor's *Principles and Practice of Medical Jurisprudence* (3d ed., Lond. 1883).

NUZZLE, v. *nŭz'l* [from NOZZLE, which see: Low Ger. *nusseln*, to nose often]: to work with the nose, as a swine, in the earth; to use the nose often; to go with the nose down like a swine; in *OE.*, to nurse; to foster; to nestle. NUZ'ZLING, imp. *-ling*. NUZZLED, pp. *nŭz'ld*.

NYACK, *nī'ák*: village in Rockland co., N. Y.; on the New York Lake Erie and Western railroad, and the Hudson river; 29 m. from New York, with which it is also connected by a line of steamers; and opposite Tarrytown, to which there is a steam ferry. There are churches of the leading denominations; a college, and excellent public and private schools; 1 daily and 3 weekly newspapers, and 1 national bank (cap. \$50,000). The streets are macadamized, and lighted by electricity; water from mountain springs is distributed from reservoirs; and there is an organized fire department. There are large shoe-shops, and hat and various other manufactures. Pop. (1870) 3,438; (1880) 3,881; (1890) 4,111; (1900) 4,275.

NYAM-NYAM, *n'yām-n'yām*: widespread and well-marked race in central Africa, occupying an area in the basins of the Upper Nile, Congo, and Shari. They have the Monbutus for neighbors in the e., among the headwaters of the Welle, and w. they border the Fan country. There are three or more branches of N., slightly differing in appearance, language, and degree of barbarism. But they are readily distinguished by their common characters from any other race. They are probably in the main of negro stock, with some alien mixture, physique and language being fundamentally negroid. One outstanding characteristic of the N. is their pronounced cannibalism in its worst forms; and they are very fierce and savage generally. Yet they are quite intelligent, and skilful in some branches of industry. The men are frank, brave and attached and faithful to their wives to a degree unknown among any other negro people. Most of our knowledge of them we owe to Schweinfurth, who visited their country 1870.

NYANGWE—NYASSA.

NYANGWE, *nyǎng'wě*: town on the Upper Congo or Lualaba, at the edge of the Manyema country, some distance below the Lukuga outlet of Lake Tanganyika. N. was the point from which Stanley commenced the descent of the Lualaba 1876.

N'YAN'ZA, ALBERT: see ALBERT N'YANZA.

N'YAN'ZA, VICTORIA: see VICTORIA N'YANZA.

NYASSA, *nyǎs'sá* or *ně-ás'sá*, or NYANJA, *nyǎn'já* or *ně-ǎn'já* (apparently the same name as N'yanza): great lake in the interior of Africa; belonging to the Zambesi river system. Dr. Livingstone discovered it 1859 by ascending the river Shiré (c.v.), which conveys the waters of the lake to the Zambesi river at a point near its mouth. The lake is 1,500 ft. above sea-level, 350 m. long, 20 to 60 m. broad, and in most parts very deep—in some places over 100 fathoms. Its waters abound with fish. None of the rivers flowing into it are navigable. The country around N. is mountainous, though much of its immediate shore is low and marshy. For 100 m. the n.e. shore is bounded by the escarped edge of a plateau 7,000 to 10,000 ft. high, down which dash numberless waterfalls. The population of its shores, once dense, has been sorely scourged by the slave-trade. Of several mission settlements at or near N., the best known is the Scottish one at Livingstonia, whose founder, Mr. E. D. Young, R.N., in 1876 circumnavigated the lake in a steamer, brought in sections up the Shiré river. The Scottish Lakes Company have done much to promote legitimate trade here. Something had previously been known about this lake under the name of the Maravi. See E. D. Young's *N, a Journal of Adventures* (Lond. 1877). See ZAMBESI RIVER AND REGION.

NYÂYA.

NYÂYA, *nyâ'ya* [from Skr. *ni*, into; *dyā*, going, a derivative from *i*, to go; hence literally 'entering.' and figuratively, 'investigating analytically']: name of the second of the three great systems of ancient Hindu philosophy; apparently so called because it treats analytically of the objects of human knowledge, both material and spiritual, distributed by it under different heads or topics; unlike, therefore, the *Vedānta* (q.v.) and *Sāṅkhya* (q.v.), which follow a synthetic method of reasoning, the former of these systems being concerned chiefly in spiritual and divine matters, and the latter in subjects relating to the material world and man. The Nyâya consists, like the other two great systems of Hindu philosophy (see MÎMÂNSÂ and SÂṆKHYA), of two divisions. The former, called NYÂYA (proper), is exclusively considered in this article; the other is known as VAISESHIKA (q.v.). With the other systems of philosophy, the N. concurs in promising beatitude, that is, final deliverance of the soul from re-birth or transmigration, to those who acquire truth—which, in the case of the Nyâya, means thorough knowledge of the principles taught by this particular system.

The topics treated of by the N. are briefly the following:

1. The *pramāṇa*, or instruments of right notion. They are: *a*. Knowledge which has arisen from the contact of a sense with its object; *b*. Inference of three sorts (*a priori*, *a posteriori*, and from analogy); *c*. Comparison; and *d*. Knowledge, verbally communicated, which may be knowledge of 'that whereof the matter is seen,' and knowledge of 'that whereof the matter is unseen' (revelation).
2. The objects or matters about which the inquiry is concerned (*prameya*). They are: *a*. The *Soul* (*âtman*); the site of knowledge or sentiment, different for each individual coexistent person, infinite, eternal, etc. Souls are therefore numerous, but the supreme soul is one; it is demonstrated as the creator of all things. *b*. *Body* (*s'arîra*); the site of action, of the organs of sensation, and of the sentiments of pain or pleasure. It is composed of parts, a framed substance, not inchoative, and not consisting of the three elements, earth, water, and fire, as some say, nor of four or all the five elements (viz., air and ether in addition to the former), as others maintain, but merely earthy. *c*. *Organs of sensation* (*indriya*); from the elements, earth, water, light, air, and ether, they are smell, taste, sight, touch, and hearing. *d*. *Their objects* (*artha*). They are the qualities of earth, etc.—viz., odor, savor, color, tangibility, and sound. *e*. *Understanding* (*buddhi*), or *apprehension* (*upalabdhi*), or *conception* (*jñāna*), terms used synonymously. It is not eternal as the Sāṅkhya maintains, but transitory. *f*. *The organ of imagination and volition* (*manas*). Its property is the not giving rise simultaneously to more notions than one. *g*. *Activity* (*pravṛtti*), or that which originates the utterances of the voice, the cognitions of the understanding, and the gestures of the body. It is therefore oral, mental, or corporeal, and the reason of all worldly proceedings. *h*. *Faults or failings* (*doshā*), which cause activity—viz., affection, aversion, and

bewilderment. *i. Transmigration* (*pretyabhâva*, literally the becoming born after having died), or the regeneration of the soul, which commences with one's first birth, and ends only with final emancipation. It belongs not to the body, because the latter is different in successive births; but to the soul, because it is eternal. *k. Fruit or retribution* (*phala*), or that which accrues from activity and failings. * It is the consciousness of pleasure or of pain. *l. Pain* (*duh'kha*), or that which has the characteristic mark of causing vexation. It is defined as 'the occurrence of birth,' or the originating of 'body,' since body is associated with various kinds of distress. Pleasure is not denied to exist, but according to the Nyâya, it deserves little consideration, since it is ever closely connected with pain. *m. Absolute deliverance or emancipation* (*apavarga*). It is annihilation of pain, or absolute cessation of one's troubles.

After (1) 'instruments of right notion,' and (2) 'the objects of inquiry,' the N. proceeds to the investigation of the following topics.

3. *Doubt* (*sam's'aya*). It arises from unsteadiness in the recognition or non-recognition of some mark, which, if we were sure of its presence or absence, would determine the subject to be so or so, or not to be so or so, but it may arise also from conflicting testimony. 4. *Motive* (*prayojana*), or that by which a person is moved to action. 5. *A familiar case* (*dr ish tânta*), or that in regard to which a man of an ordinary and a man of a superior intellect entertain the same opinion. 6. *Tenet or dogma* (*siddhânta*). It is either 'a tenet of all schools,' i.e., universally acknowledged, or 'a tenet peculiar to some school,' i.e., partially acknowledged; or 'a hypothetical dogma,' i.e., one which rests on the supposed truth of another dogma; or 'an implied dogma,' i.e., one the correctness of which is not expressly proved, but tacitly admitted by the Nyâya. 7. The different members (*avayava*) of a regular argument or *sylogism* (*nyâya*). 8. *Confutation*, or reduction to absurdity (*tarka*). It consists in directing a person who does not apprehend the force of the argument as first presented to him, to look at it from an opposite point of view. 9. *Ascertainment* (*nirn'aya*). It is the determination of a question by hearing both what is to be said for and against it, after having been in doubt. The three next topics relate to the topic of controversy—viz., 10. *Discussion* (*vâda*), which is defined as consisting in the defending by proofs on the part of the one disputant, and the controverting it by objections on the part of the other, without discordance in respect of the principles on which the conclusion is to depend; it is, in short, an honest sort of discussion, such, for instance, as takes place between a preceptor and his pupil, and where the debate is conducted without ambition of victory. 11. *Wrangling* (*jalpa*), consisting in the defense or attack of a proposition by means of tricks, futilities, and like means; it is therefore a kind of discussion where the disputants are merely desirous of victory, instead of being desirous of truth. 12. *Cavilling* (*vitandâ*), when a man does not attempt to establish the opposite side

of the question, but confines himself to carping disingenuously at the arguments of the other party. 13. *Fallacies*, or semblances of reasons (*hetvābhāsa*), five sorts of which are distinguished, viz., the erratic, the contradictory, the equally available on both sides, that which, standing itself in the need of proof, does not differ from that which is to be proved, and that which is adduced when the time is not that when it might have availed. 14. *Tricks*, or unfairness in disputation (*chhala*), or the opposing of a proposition by means of assuming a different sense from that which the objector well knows the propounder intended to convey by his terms. It is distinguished as verbal misconstruing of what is ambiguous, as perverting in a literal sense, what is said in a metaphorical one, and as generalizing what is particular. 15. *Futile objections* (*jāti*), of which 24 sorts are enumerated; and, 16. Failure in argument or reason of defeat (*nigraha-sthāna*), of which 22 distinctions are specified.

The great prominence given by the N. to the *method*, by means of which truth might be ascertained, has sometimes misled European writers into the belief that it is merely a system of formal logic, not engaged in metaphysical investigations. But though the foregoing enumeration of the topics treated by it could touch on only the main points which form the subject-matter of the N., it shows that the N. was intended to be a complete system of philosophical investigation; and some questions, such as the nature of intellect, articulated sound, etc., or those of genus, variety, and individual, it has dealt with in a masterly manner, deserving the notice of western speculation. That the atomistic theory has been devolved from it, is shown under VAIS'ESHIKA. The prominent position, however, which the *method* of discussion holds in this system, and the frequent allusion made by European writers to a Hindu syllogism, makes it expedient to explain how the N. defines the 'different members of a syllogism' under its seventh topic. A regular argument consists, according to it, of five members—viz., *a.* the proposition (*pratijñā*), or the declaration of what is to be established; *b.* the reason (*hetu*), or 'the means for the establishing of what is to be established;' *c.* the *example* (*udāharan'a*), i.e., some familiar case illustrating the fact to be established, or, inversely, some familiar case illustrating the impossibility of the contrary fact; *d.* the application (*upanaya*), or 're-statement of that in respect of which something is to be established;' and *e.* the conclusion (*nigamana*), or 'the re-stating of the proposition because of the mention of the reason.' An instance of such a syllogism would run accordingly thus: *a.* This hill is fiery, *b.* for it smokes, *c.* as a culinary hearth, or (inversely) not as a lake, from which vapor is seen arising, vapor not being smoke, because a lake is invariably devoid of fire; *d.* accordingly, the hill is smoking; *e.* therefore, it is fiery.

The founder of the N. system is reputed under the name of *Gotama*, or, as it also occurs, *Gautama* (which would mean a descendant of Gotama). There is, however, nothing

NYCTAGINACEÆ—NYCTALOPIA.

as yet known as to the history of this personage or the time when he lived, though it is probable that the work attributed to him is, in its present shape, later than the work of the great grammarian Pân'inî. It consists of five books or *Adhyâyas*, each divided into two 'days,' or diurnal lessons, again subdivided into sections or topics, each of which contains several aphorisms, or *Sûtras*: see SÛTRA. It has been explained or annotated by a triple set of commentaries, which, in their turn, have become the source of more popular or elementary treatises.—The Sanskrit text of the *Sûtras* of Gotama, with a commentary by *Vis'wanâtha*, has been edited at Calcutta (1828); and the first four books, and part of the fifth, of the text, with an English version, an English commentary, and extracts from the Sanskrit commentary of Vis'wanâtha, by the late Dr. J. R. Ballantyne (Allahabad 1850-54). This excellent English version and commentary, and the celebrated Essay on the N, by H. T. Colebrooke (*Transactions of the Royal Asiatic Society*, I. London 1827; reprinted in the *Miscellaneous Essays*, I. London 1837), are the best guide for the European student who, without a knowledge of Sanskrit, would wish to familiarize himself with the N. system.

NYCTAGINACEÆ, *nĭk-ta-jĭ-nŭ'sê-ê*: a natural order of exogenous plants, consisting partly of herbaceous plants, both annual and perennial, partly of shrubs and trees. Lindley ranks them in his *Chenopodal Alliance*. The flowers are either clustered or solitary, and either the cluster or the flower frequently has an involucre, which is often gayly colored. The perianth is tubular, plaited in bud, colored; the limb entire or toothed, deciduous. The stamens are equal in number to the lobes of the perianth. The ovary is superior, with one ovule, and one style. The fruit is a thin *caryopsis*, inclosed within the enlarged and indurated base of the perianth.—There are about 100 known species, natives of warm countries. Some have flowers of considerable beauty, e.g., of the genus *Mirabilis*, known in gardens as *Marvel of Peru*, one of which, *M. Jalapa*, was at one time erroneously supposed to produce jalap. The roots of many are fleshy, purgative, and emetic. Those of *Boerhaavia paniculata* are used instead of ipecacuanha both in Guiana and in Java.

NYCTALOPIA, n. *nĭk-tă-lō-pĭ-ă*, or NYCTALOPY, n. *nĭk-tă-lō-pĭ* [Gr. *nuktalōps*; L. *nyctalops*, used by ancient authors in two opposite senses—'not seeing at night,' and 'seeing only at night'—from Gr. *nukta*, night; *ōps*, the eye]: night-blindness; diseased condition of the eye in which a person who sees distinctly by day loses his vision partially or entirely at approach of night. The disease may continue one night or a year; but its usual duration is two weeks to three or four months. It is most frequent in hot climates where there is strong sun-glare, also in snowy regions. The disease usually passes away of itself after a time. NYCTALOPS, n. *nĭk-tă-lōps*, one affected with the disease nyctalopia. Note.—NYCTALOPIA is by some writers applied in the opposite sense of vision obscured by day and good at night (see HEMERALOPIA).

NYCTERIBIA—NYKÖPING.

NYCTERIBIA, *nìk-tér-ìb'ì-a*: extremely curious genus of insects, ranked in the order *Diptera*, though very different from most of that order, and having neither wings nor balancers. Its nearest alliance is with *Hippoboscidae* (see FOREST FLY: SHEEP TICK), which it resembles particularly in parasitic habits, and in the retention of the eggs within the abdomen of the female, until they have not only been hatched, but have passed from the larva into the pupa state. The form, however, is so spider-like, that these insects were at first ranked among the *Arachnida*. The few species known all are parasitic on bats, on which they run about with great activity. The head is very small, curiously affixed to the back of the thorax, and when the creature sucks the blood of the bat, upon which it lives, it places itself in a reversed position.

NYIREGYHAZA, *nyēr-ědj-há'zõh* or *ñē-rědj-há'zõh*: a town of Hungary, in the county of Szaboles, on the railway between Debreczin and Tokay. The trade in agricultural produce is considerable. N. has salt, soda, and salt-petre works. There are mineral springs in the neighborhood. Pop. (1880) 24,102.

NYKERK, *nī'kèrk*, or **NIEUWKERK**, *nyüv'kèrk*: on the Veluwe, very flourishing and well-built town, near the Zuyder Zee, province of Gelderland, Netherlands, 25 m. n.w. of Arnheim. Pop. 8,000. It has a good harbor, connected with the sea by a wide canal $1\frac{1}{2}$ m. in length. In the neighborhood are rich meadow-pastures and lands suited for all kinds of grain, tobacco, potatoes, etc. Tobacco is extensively grown; many cattle are raised, and there is a brisk trade both with the surrounding country and with Amsterdam, the market to which the cattle, tobacco, dairy, and other agricultural produce, with much firewood are sent. N. has a handsome Reformed church, a Rom. Cath. chapel, a synagogue, orphan house, and good schools. There are also several manufactures. In Netherlands' church history, N. is famed as the place where a great religious movement began at the middle of the 18th c., and spreading throughout the land showed all the marks of the later revivals in America, Scotland, and Ireland. See Ypey and Dermout's *Geschiedenis der Nederd. Her. Kerk*, vol. iv.

NYKÖPING, *nü'chō-pīng*: seaport of Sweden, pleasantly situated on the Baltic, lat. $58^{\circ} 45'$ n., long. 17° e., about 60 m. s.w. of Stockholm. It comprises among its manufacturing products cotton goods, stockings, tobacco, etc., and has good ship yards, mills, and manufactories for machinery. Near the town are extensive paper mills. The ruined old castle of N., nearly destroyed by fire 1665, and which ranked in strength next to those of Stockholm and Calmar, has experienced many vicissitudes of fortune. King Valdemar of Sweden, after his dethronement 1288, was imprisoned here till his death 1302; but the most tragic incident connected with N. Castle was the horrible death within its walls of the Dukes Eric and Valdemar, who, after being entrapped by their pusillanimous brother, King Birger, 1317, were left to perish of hunger in a

NYLGAU—NYMPH.

dungeon, the keys of which the king threw into the sea before he left the castle. The horror of this deed roused the indignation of the people, who seized upon the castle, sacked it, and demolished its keep and donjons. In 1719, the town was taken and dismantled by the Russians; and since then it has ceased to be the scene of any events of historical interest. It is noted for the pure Swedish spoken by its inhabitants. Pop. (1885) 5,374; (1890) 5,978.

NYLGAU, or NYLGHAU, n. *nīl'gaw*, or NILGAI, or NEELGHAU [Hind. *nil*, blue; *gaw*, a cow or bull—*lit.*, the blue-cow]. (*Antelope picta* or *Portia trayocamelus*): species of antelope, with somewhat ox-like head and body, but with long slender limbs, and of great activity and fleetness. It is one of the largest of antelopes, and is more than four ft. high at the shoulder. The horns of the male are about as long as the ears, smooth, black, pointed, slightly curved forward. The female has no horns. The



Nylgau (*Antelope picta*).

neck is deep and compressed, not rounded as in most of the antelopes. A slight mane runs along the neck and part of the back, and the breast is adorned with a long hanging tuft of hair. The back is elevated almost into a hump between the shoulders. The N. inhabits the dense forests of India and Persia, where it has long been regarded as one of the noblest kinds of game. It is often taken, like other large animals, by inclosing a large space with nets, and by great numbers of people. It is a spirited animal, and dangerous to a rash assailant. It is capable of domestication, but is said to have an irritable and capricious temper.

NYMPH, n. *nĭmf* [L. *nympha*; Gr. *numphē*; F. *nymphē*, a nymph]: in *classic mythology*, a female divinity of inferior rank, inhabiting the sea, streams, groves, meadows, and pastures, grottoes, fountains, hills, glens, trees, etc. Different classes of nymphs were distinguished, par-

NYMPHÆACEÆ—NYSTAGMOS.

ticularly the *Oceanides*, daughters of Oceanus (Nymphs of the great ocean which flows around the earth), the *Nereids*, daughters of Nereus (Nymphs of the inner depths of the sea, or of the Inner Sea—the Mediterranean), *Potameides* (River Nymphs), *Naiads* (Nymphs of fountains, lakes, brooks, wells), *Oreades* (Mountain Nymphs), *Dryads* or *Hamadryads* (Forest Nymphs, who were believed to die with the trees in which they dwelt). The Nymphs were the goddesses of fertilizing moisture, and were represented as taking an interest in the nourishment and growth of infants, and as being addicted to the chase (companions of the divine huntress Diana), to female occupations, and to dancing. They are among the most beautiful conceptions of the plastic fancy of the ancient Greeks, who, in the various phenomena of nature felt, with a poetic vividness that our modern science will hardly permit to us, the presence of unseen vital and personal powers. In *poetry*, N. is the symbol of a beautiful young woman. NYMPH-LIKE, a. resembling nymphs or becoming to them. NYMPHA, n. *nĭm'fǎ*, the second state, pupa, or chrysalis of an insect: plu. NYMPHÆ, -*fē*. NYPHEAN, a. *nĭm-fē'ăn*, or NYMPHICAL, a. *nĭm'fĭ-kāl*, pertaining to nymphs; inhabited by nymphs. NYMPHS, n. plu. the active pupæ of certain insects.

NYMPHÆACEÆ, *nĭm-fē-ā'sē-ē*: natural order of exogenous plants, growing in lakes, ponds, ditches, and slow rivers, where their fleshy rootstocks are prostrate in the mud at the bottom; and their large, long-stalked, heart-shaped, or peltate leaves float on the surface of the water. Their flowers also either float, or are raised on their stalks a little above the water. The flowers are large, and often very beautiful and fragrant. There are usually four sepals, and numerous petals and stamens, often passing gradually into one another. The ovary is many-celled, with radiating stigmas, and very numerous ovules, and is more or less surrounded by a large fleshy disk. The seeds have a farinaceous albumen. More than 50 species are known, natives mostly of warm and temperate regions. The rootstocks of some are used as food, and the seeds of many.—See WALTER-LILY: LOTUS: VICTORIA: EURYALE.—Very nearly allied to N. are *Nelumbiaceæ*: see NELUMBO.

NYMPHOLEPSY, n. *nĭm'fō-lēp'sĭ* [Gr. *numphē*, a nymph-goddess; *lēpsis*, taking—from *lambanō*, I take]: a frenzy occasioned by seeing one of the nymphs; fascination through a nymph-goddess.

NYS'SA: see TUPELO.

NYSTADT, *nŭ'stāt*: town of Finland, on the e. coast of the Gulf of Bothnia, 50 m. s. of Biorneborg. Here, 1721, a treaty was agreed to, between Russia and Sweden, by which all the conquests of Peter the Great along the coasts of the Gulf of Finland were annexed to Russia. Pop. (1880) 3,837.

NYSTAGMOS, n. *nĭs-tăg'mōs* [Gr. *nus'tagmos*, slumbering with nodding]: a winking of the eyes, as in drowsiness; a condition of indistinct vision.

O

O, or **o**, **ō**: fifteenth letter in the English and in most western alphabets; fourth of the English vowels. As the language is at present pronounced, it stands for four or five distinct sounds, heard in the words *note*, *nōr* (nōt), *more*, *son*. The primary and simple sound of **O** is that heard long in *nōr*, and short in *nōt*, *tōp*. The sound given to it in such words as *note*, *go*, is really a diphthong—a long *o* terminating in a slight *u* or *oo* sound (**O**—^u). The corresponding letter in the Hebrew and Phœnician Alphabet (q.v.) was called *Ayn*, i.e., ‘eye;’ accordingly the primitive form of the Phœnician letter was a rough picture of an eye, which naturally became a circle with a dot in the centre—still seen in some ancient inscriptions—and later a simple circle. **O** is used to designate a space inclosed by a circular boundary: also in the sense of nothing, or absence of a significant number: in *arith.*, a cipher; zero. **O**’s or **OES**, rings or small circles.

O’, a prefix in many Irish family names, serves to form a patronimic, like *Mac* (son) in Gaelic names; as *O’Brien*, a descendant of *Brien*. By some, it is considered to be derived from *of*; but it is more likely from Ir. *ua*, Gael. *ogha*, a grandson. In Lowland Scottish, the word *oe* is used for grandson, and in some localities for nephew.

O, or **OH**, int. *ō* [Goth. *o*; L. *o*; Gr. *ō*]: natural exclamatory sound, used in addressing a person or a personified object, to express invoking or imploring, and nearly always in addressing the Deity. Some writers attempt to distinguish *Oh* as employed to express an earnest wish, admiration, or pity, warning, pain, sorrow, surprise, or dissent; while *O* is reserved for earnest personal address; but the best writers use the two forms indiscriminately, *O* being now most usual. The point (!) called the point of exclamation is often put after *O* and *oh*, but when rightly used the (!) ought to be placed after the noun only—the *O*, in fact, only marking the vocative case. **OH DEAR** and **OH DEAR ME** [generally regarded as corruptions of F. *O Dieu*, or It. *O Dio*, *O God*, and It. *O Dio mio*, *O my God*]: exclamations expressive of surprise, uneasiness or exhaustion, fear, pain, and the like. **O YES**: see **OYES**.

OAF, n. *ōf* [Icel. *alfr*, an elf or fairy: comp. Gael. *amh* = *āv*, a fool]: a foolish child, or idiot, left by fairies in place of another who is carried off by them; a changeling; a dolt; a blockhead. **OAF’ISH**, a. *-ish*, stupid.

OAHU, *wā’kō*, or *ō-ā’kō*; one of the Sandwich Islands (q.v.).

OAJACA—OAK.

OAJACO, or OAXACA, *wâ-châ'kâ*, or Guaxaca, *gwâ-châ'kâ*: state in Mex., bordering on Pacific Ocean and Gulf of Tehautepec; it is 270 miles long on Pacific shore, its greatest breadth being 170 m.; 27,389 sq. m. The surface is very mountainous, being crossed by the Mexican Andes and its two lateral branches, which divide the region into valleys and gorges of surpassing beauty. The principal rivers are the Rio Grande, Alvarado and Cape Verde. O. is one of the most beautiful and cultivated districts in Mexico; the soil is very fertile, and when properly irrigated will yield two crops of wheat and maize annually. The climate is delightful and healthful, with all the variations of the temperate and torrid zones. Gold, silver, lead, and iron abound; but the mines are comparatively undeveloped. The chief agricultural products are sugar, coffee, cotton, cacao, tobacco, indigo, and a great variety of fruits; valuable timber and dye-woods are found; cochineal is an important product. Manufactures are numerous, and the school statistics show that education is not neglected. The inhabitants are mostly mestizoes and Indian tribes. Pop. (1892) 793,419; (1900) 947,910.

OAJA'CA, or OAXA'CA, or GUAXA'CA: city of Mexico, cap. of the state of O.; on the river Rio Verde, 210 m. s.s.e. of Mexico; 1,600 ft. above sea-level. It covers an area 2 m. in length by $1\frac{1}{2}$ in breadth, is well built, with open streets, interspersed with plantations, on which the cochineal insect feeds. Silk, cotton, sugar, and chocolate are manufactured. O. dates from 1522. It suffered from earthquake 1870. Pop. (1892) 27,856; (1900) 35,049.

OAK, n. *ōk* [AS. *ac*; Icel. *eyk*; Ger. *eiche*, an oak]: tree of many species; also its wood, used in ship-building and for many other purposes, noted for hardness and durability; the common oak is the *Quercus pedunculātā* or *robur*, ord. *Cupulif'ēræ* or *Cor'ylacēæ* (see below). OAKEN, a. *ōk'n*, made of oak. OAK'LING, n. *-līng* [*oak*, and *ling*, a dim. termination]: a young oak. OAK-APPLE, a kind of gall, being a spongy excrescence on oak-leaves and tender branches (see GALL or GALL-NUT: GALL-FLY). OAK-BARK, the bark of the oak, used in tanning. OAK-FERN, a delicate wild fern, the *Polyōdīūm Dryopteris*, ord. *Filicēs*. OAK-LEATHER, a kind of fungus spawn in old oaks having the appearance of white kid-leather. OAK-PAPER, paper-hangings stained like the grain of oak wood.

OAK.

OAK (*Quercus*): genus of trees and shrubs of nat. order *Cupuliferae*, having a three-celled ovary, and a round (not angular) nut—called an *acorn*—placed in a scaly truncated cup, the lower part of it invested by the cup. The species are very numerous, natives of temperate and tropical countries. A few species are found in Europe. N. America produces many; and many are natives of mountainous regions in the torrid zone; some are found at low elevations in the valleys of the Himalaya, some even at the level of the sea in the Malay peninsula and Indian islands. But in the peninsula of India and in Ceylon, none are found; and none in tropical Africa, in Australia, or in S. America. The oaks have alternate simple leaves, entire in some, but in the greater number variously lobed and sinuated or cut; evergreen in some, but generally deciduous. Many of the trees are of great size, famous for strength and durability of timber, as well as for majesty of appearance, and great longevity.—Throughout all Europe, except the extreme north, two species are found, or varieties of one species, the COMMON OAK (*Q. robur*), the only indigenous British species; one variety (*Q. pedunculata*) having the acorns on long stalks. the other (*Q. sessiliflora*) having them almost without stalks. Other differences have been pointed out; but they are regarded by some of the most eminent and careful botanists as merely accidental, and not coincident with these; while, as to the length of the fruit-stalks, every intermediate gradation occurs. Both varieties, occur in Britain, the first being the most prevalent, as it is generally in n. Europe; the second being more abundant in more southern countries. The short-stalked oak is called sometimes DURMAST OAK in England. It has been much disputed which is entitled to be considered the true British oak; and much alarm has occasionally been expressed lest new plantations should be made of the wrong kind; while contradictory statements have been made as to the comparative value and characters of the timber. The oak succeeds best in loamy soils, especially in those somewhat calcareous. It cannot endure stagnant water. It succeeds well on soils too poor for ash or elm; but depends much on the depth of the soil, its roots penetrating more deeply than those of most other trees. Noble specimens of oak trees, and some historically celebrated, exist in almost all parts of Britain; but are much more frequent in England than in Scotland. The former existence of great oak forests is attested by the huge trunks often found in bogs. The oak attains a height of 50 to 100 or even 150 or 180 ft.; the trunk being four, six, or even eight ft. in diameter. It sometimes grows tall and stately, but often rather shows great thickness of bole and magnitude of branches. It reaches its full size in periods varying from 120 to 400 years, but lives to the age of 600, or even 1,000 years. The timber is very solid, durable, peculiarly unsusceptible of the influence of moisture, and therefore eminently adapted for ship-building. It is used also in carpentry, mill-work, etc.—The bark abounds in tannin; it contains also a peculiar bitter principle called *Quercine*, and is used in medicine, chiefly

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in gargles, etc., on account of its astringency, sometimes also as a tonic; it is used with gall-nuts in manufacture of ink; but most of all for tanning (see BARK), and on this account the oak is often planted as copse-wood (see COPSE) in situations where it cannot be expected to attain great size as a tree. The timber of copse oak is excellent firewood. The oak is particularly fitted for copse-wood, by the readiness with which it springs again from the stools after it has been cut.—Acorns are very nourishing food for swine, and in times of scarcity have been used often for human food, as, indeed, they commonly are in some very poor countries, either alone or mixed with meal. The bitterness which makes them disagreeable is said to be in part removed by burying them for a time in the earth. The acorns of some trees are much less bitter than others, and oaks of the common species occur which produce acorns as sweet as chestnuts. Other varieties of the common oak are assiduously propagated by nurserymen as curious and ornamental, particularly one with pendulous branchlets (the *Weeping Oak*), and one with branches growing up close to the stem, as in some kinds of poplar. Among the Greeks and Romans, the oak was sacred to Zeus or Jupiter; and it has been connected with the religious observances of many nations, as of the ancient Celts and Germans.—The TURKEY OAK or ADRIATIC OAK (*Q. cerris*), now very frequently planted in Britain, is a large and valuable tree, very common in s.e. Europe, and parts of Asia. The timber is imported in considerable quantity into Britain for ship building and other purposes. The leaves differ from those of the common oak in their acute lobes, and the cups of the acorns are *mossy*, i.e., have long, loose, acute scales. Similar to this, in both these respects, are the AUSTRIAN OAK (*Q. Austriaca*), abundant near Vienna, and the SPANISH OAK (*Q. Hispanica*).—For the CORK OAK or CORK TREE (*Q. suber*), see CORK; for the HOLM OAK or EVERGREEN OAK (*Q. ilex*), another of the species found in s. Europe, see ILEX.—Of the N. Amer. oaks, some are very valuable as timber trees. Perhaps the most important is the WHITE OAK or QUEBEC OAK (*Q. alba*), a large tree, the leaves of which have a few rounded lobes. It is found from the Gulf of Mexico to Canada; and in some places forms the chief part of the forest. The timber is less compact than that of the British oak; that of young trees is very elastic.—The OVERCUP OAK (*Q. lyrata*), a majestic tree, highly esteemed for its timber, and having its acorns almost covered by their globular cup, grows chiefly in lands liable to inundation in the Southern States.—The CHESTNUT-LEAVED WHITE OAK (*Q. prinus*), also is a much-esteemed timber-tree of the Southern States.—The SWAMP WHITE OAK (*Q. bicolor*), a closely allied species, extends further north.—The LIVE OAK (*Q. virens*), an evergreen species, with entire leathery leaves, is regarded as a tree of the first importance in the United States, from the excellence of its timber and its value for ship-building, so that efforts have been made by the govt. to protect it and to promote the planting of its

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acorns. Yet it is not a very large tree, being seldom more than 45 ft. in height, with a trunk of two ft. in diameter. It grows on the Gulf of Mexico, and as far n. as Va. It abounded formerly on the Sea Islands, now noted for their cotton.—The RED OAK (*Q. rubra*), a large tree, with sinuated and lobed leaves, the lobes toothed and bristle-pointed, yields great part of the *Red Oak Staves* exported from Canada and the n. of the United States to the W. Indies; but *Red Oak Staves* are produced in the Middle and Southern States by the SCARLET OAK (*Q. coccinea*), also, a very similar species; by the BLACK OAK or QUERCITRON OAK (*Q. tinctoria*), another species with the lobes of the leaves bristle-pointed, better known for the dye-stuff which its bark yields (see QUERCITRON); and by the WILLOW OAK (*Q. phellos*), a large tree with lanceolate leaves and a willow-like aspect. The timber of these species is inferior. These are the American oaks of greatest economical and commercial importance, but there are numerous other species, some of them trees, some mere shrubs, of which some grow on poor soils, and cover them in compact masses; resembling in this a single European species (*Q. viminalis*), native of the Vosges, 6–8 ft. high, with slender tough branches, which makes excellent hedges.—The BLACK JACK (*Q. nigra*), is an American oak, notable chiefly for abundant growth on some of the poorest soils. It is a small tree, and its timber of little value. The bark is black.—Some of the Nepaulese oaks are large and valuable, as are some of those of China and Japan, of Java, of Mexico, etc. The oaks of Java and the other Indian islands, have generally the leaves quite entire.—The bark of most of the species of oak is capable of being used for tanning, and is so used in different countries. The cups and acorns of the VALONIA OAK (*Q. Ægilops*) are exported from the Morea and other parts of the Levant, in great quantities for this purpose, under the name *Valonia*; see LEATHER. The tree resembles the Turkey Oak, and has very large hemispherical mossy cups. The cups are said to contain more tannin than any other vegetable substance.—Galls or Gall-nuts are in great part obtained from the oak therefore called the GALL-OAK (*Q. infectoria*), a scrubby bush, native of Asia Minor, with bluntly serrated, ovate oblong leaves (see GALL or GALL-NUT: GALL-FLY).—The KERMES OAK (*Q. coccifera*), on whose leaves the Kermes (q.v) insect is found, is a low bush, with evergreen spinous leaves, resembling a holly, native of s.e. Europe.—Of oaks with sweet and edible acorns, are the BALLOTE OAK (*Q. Ballota* or *Gramuntia*), an evergreen with round spiny-toothed leaves, native of n. Africa, whose long cylindrical acorns are regularly brought to market in Algeria and in Spain; the ITALIAN OAK (*Q. Æsculus*), closely allied to the common oak; and the DWARF CHESTNUT OAK (*Q. chinquapin* or *prinoides*), of N. America, a small shrubby species, often called Chinquapin, and specially commended for cultivation for its edible nuts. Other N. Amer. species, and some Himalayan species, also produce edible acorns. From the acorns

OAK BEAUTY—OAKHAM.

of some species, oil for use in cookery is made in different parts of the world.—The leaves of the MANNA OAK (*Q. mannifera*)—native of the mountains of Kurdistan, having oblong, blunt-lobed leaves—secrete in hot weather a kind of manna, a sweet mucilaginous substance, which is made into sweetmeats, and much esteemed.

The name oak is sometimes popularly applied to timber trees of very different genera. Thus AFRICAN OAK is another name for African Teak: see TEAK. Some species of *Casuarina* (q.v.) are called Oak in Australia. The STONE OAK (*Lithocarpus Javanensis*) of Java, so named from the extreme hardness of its timber, is of the same family with the true oaks.—See OAKS.

OAK BEAUTY (*Biston prodromaria*): moth of family *Geometridæ*, native of England, about an inch and a half or two inches in expanse of wings; the upper wings with two brown curved bands margined with black, the lower wings with one brown band. Its caterpillar feeds on the oak.

OAKES, *ōks*, URIAH, D.D.: 1631–1681, July 25; b. England. He came to America 1634, and graduated at Harvard 1649. He studied theology, preached for a short time at Roxbury, Mass., and then settled in Titchfield England. He was compelled to relinquish his charge 1662, because of his nonconformist views, but he afterward presided over another congregation. He was called as pastor of the First Church (Congl.) at Cambridge, Mass., 1668, at the death of Jonathan Mitchell, but he did not begin his work till 1671. In 1675, April 7, he assumed the duties of pres. of Harvard College, to which office he had been appointed, and was formally installed 1680, Feb. 2. His published writing, include a series of astronomical calculations issued in his early youth. and the Sermons. Latin Eulogy, and Elegy in English verse of his later years. He died in Cambridge.

OAKHAM, *ō'kam*: county-town of Rutlandshire, England; in the vale of Catmos, 25 m. w.n.w. of Peterborough. The castle is in ruins except the portion used as the county hall. The church, restored 1858, is in the perpendicular style, and has a fine tower and spire. The Free Grammar-school, with endowment of about £700 a year, was founded 1581. Pop. (1881) 3,227; (1891) 4,134.

OAKLAND.

OAKLAND, *ôk'land*: city, cap. of Alameda co., Cal., on the e. side of San Francisco Bay, opposite San Francisco, about 7 m. distant, 133 m. s.w. of Sacramento; on railroads belonging to the Southern Pacific Company's system. The harbor is large and excellent, and communication with many interior points is furnished by the San Joaquin and the Sacramento rivers. Two steam railroads and ferries furnish regular and frequent communication with San Francisco. The estuary is crossed by three drawbridges, two of which are used by railroads. The city has 30 churches; nearly as many schools; 2 academies; a theol. seminary (Congl.); a college for girls, and a convent; 2 libraries; 3 daily and 8 weekly newspapers, one of the latter in German; and 1 quarterly and 3 monthly publications; 1 savings bank, 2 national and 2 state banks; and a state asylum for the blind. Among the fine public buildings are the court-house, erected at a cost of \$200,000; a city hall, and a hall of records. There are several fine hotels and numerous costly residences. The city is well laid out, on a plateau rising from the bay, and on the other sides flanked by hills; the streets are wide, shaded by large oak trees, and are lighted by gas. An abundant supply of pure water is obtained from the adjacent hills, and a reservoir of salt water is kept for flushing the sewers. The principal streets are macadamized, and there are several lines of horse and cable cars. The police and fire departments are thoroughly organized and well sustained. The harbor and railroads give the city excellent commercial facilities. Manufactures are varied and extensive, and are rapidly increasing: they include leather, shoes, cordage, cotton-goods, and woolen goods, nails, furniture, carriages, windmills, and various agricultural implements. There are also marble-works and iron works, glass-works, potteries, flouring-mills and planing-mills, a quartz-mill, smelting works, a jute factory said to turn out 5,000,000 sacks each year, and large fruit-preserving establishments. In the immediate vicinity of the city are numerous fine country places adorned with gardens and flowers. There are also large vineyards, productive fruit farms, and many beautiful drives. At Berkeley, 5 m. n., is the Univ. of California, which was removed from O.; also a state institution for the deaf, dumb, and blind; and the State Agricultural College. The first settlement at O. was made 1850, and a town was incorporated two years later. It made but little progress till 1868, when the Central Pacific Company gave it railroad and ferry communication with San Francisco and other points. Since that date its growth has been very rapid. It furnishes homes for many people doing business in San Francisco, and is a favorite resort for tourists and invalids. The climate is remarkably uniform, and is so mild that such plants as the fuchsia and geranium can safely be left in the ground during winter without protection. 1875-85 the mean maximum temperature was 91°, and the mean lowest temperature was 32°. Pop. (1870) 10,500; 1880) 34,555, (1890) 48,682.

OAKS.

OAKS, in North America: see OAK.—Agassiz spoke of America as the old world, because many of our trees, the remarkable variety of oaks especially, characterize the past tertiary age in Europe, though not the same species. There are about 40 species of oak in N. Amer., of which one-half occur in the n. states. Besides their value as timber, etc., they offer a great variety in landscape or for ornamental purposes, having the recommendation of clean green foliage, holding it late, with deep, rich, autumn tints, some of them with a contrasting angularity of branches, or other oddity, and some adapted to poor soils and severe exposures. The White O. grows to great size, is picturesque, and turns brown and purple, but retains its faded leaves through winter. The Bur or Mossy-cup O. (*Q. macrocarpa*) is the largest-leaved of the genus, handsome, medium-sized. Of the chestnut-leaved oaks, the Swamp White O. (*Q. bicolor*) has the leaves white-downy beneath, and these turn leathery yellow in autumn; at middle age the growth is graceful and rapid to large size. The Rock Chestnut O. (*Q. prinus*, var. *monticola*) is not large, and is regarded as the best for ornamental planting. The Dwarf Chestnut O. (*Q. prinus*, var. *humilis*), like the Rock, grows on barren ground; it has been proposed as nurse for forest plantations; it grows 2 to 4 ft. high. Of the black and red oaks, the Black Scrub O. (*Q. ilicifolia*) has been suggested for hedges. The Scarlet O. (*Q. coccinea*) has the richest autumn color, and is deep blood-red when seen from beneath in sunlight; its bright, shining green in summer, and fringe-like, almost skeleton leaves, are beautiful. Its variety, the Black O., is orange, dull red, or brownish in the fall. The Red O. turns to purplish red. The Swamp Spanish or Pin O. (*Q. palustris*) is spoken of by Loudon as the most graceful of its genus; in open ground, under cultivation, the lower branches droop. The Willow O. (*Q. Phellos*) is desirable for its oddity. Of foreign oaks, the famous British White O. is much like the Amer.; it is a fine feature in many English parks and wilds. A variety of it droops like the weeping willow, and attains a height of 75 ft. There is a pendulous variety of the Turkey O., the branches of which even creep along the ground after touching it. The Japan Purple O. has in Sep. the fine color that renders the Purple Beach interesting early in the season. These varieties could be grafted on the Amer. White Oak.

OAKUM—OANNES.

OAKUM, n. *ōk'ūm* [AS. *ācumba*: OHG. *acambi*, tow: AS. *camb*, a comb—*literally*, that which is combed out]: tangled mass of tarred hempen fibres, made from old rope by untwisting the strands and rubbing the fibres free from each other. Its principal use is in Caulking (q.v.) the seams between planks, the space round rivets, bolts, etc., to prevent water from penetrating.

OANNES, *ō-ān nēz*: Babylonian god, said in the legend preserved by Berosus and Apollodorus to have come—in the first year of the foundation of Babylon—out of the Persian Gulf, or the old Erythræan Sea, adjoining Babylon. He is described as having the head and body of a fish, to which were added a human head and feet under the fish's head and at the tail. He lived among men during the daytime, without, however, taking any food, and



Oannes.

retired at sunset to the sea, from which he had emerged. O. had a human voice, and instructed men in the use of letters, and in all the principal arts and sciences of civilization. Five such monsters are said to have come out of the Persian Gulf; one, called Anedotos or Idotion, in the reign of Amenon, fourth king of Babylon; another in that of the fifth king; and the last, called Odacon (or Ho Dagon), apparently the Phœnician Dagon, under the sixth king. Many figures of O, resembling that of a Triton, having the upper part of a man and the lower of a fish, or as a man covered with a fish's body, have been found in the sculptures of Kouyunjik and Khorsabad, as well as on many cylinders and gems. O. has by some been taken as a symbol of the conquest of Babylonia by a more civilized nation coming in ships to the mouth of the Euphrates; but he is apparently a water-god, resembling in type and character the Phœnician Dagon, and the Greek Proteus and Triton.—Helladius, *Apud Phot. Cod.* 279, pp. 535, 34; Richter, *De Beroso*; Cory, *Anc. Fragm.*, p. 30; I Sam. v. 4; Bunsen, *Egypt's Place*, l. 706; Layard, *Nineveh*, 343.

OAR.



Oar.

OAR, n. *ōr* [Icel. *ár*; Dan. *aare*; Fin. *airo*; Esthon. *aer*, an oar; AS. *ár*, an oar; *ear*, the sea — *lit.*, the plowshare of the water (see EARING): comp. L. *aro*, to plow]: a pole with a broad flat end or blade, used in propelling a boat. The form found in practice to combine greatest power with lightness, is shown in the figure. From *a* to *b* is the blade of the oar, thin and nearly flat, though occasionally somewhat curved, so as to present a concave surface to the water; from *b* to *d* is round or square, gradually thickening toward *d*, that the short part *ce* may nearly balance the long part *ac*. At *de* is the handle, to be grasped by one or both hands. The oar rests at *c* on the *row-lock*, and in many cases some device is resorted to, to retain the oar from slipping outward. In the Thames, a leathern stop, called a button, is used: sometimes a pin in the gunwale of the boat passes through the oar (but this weakens the oar, and precludes *feathering*); at other times the oar is fastened to the pin by a leathern thong. The action of an oar in moving a boat is that of a lever, the rower's hand being the power, the water the fulcrum, against which the oar presses, and the row-lock the point at which the opposition caused by the weight of the boat and its cargo is felt. *Feathering* an oar consists in turning it, immediately on leaving the water, so that the flat blade of the oar is horizontal, and in preserving this position until just before the fresh dip, when of course the vertical position must be resumed. Feathering diminishes the resistance offered by air, wind, and small waves; it also adds greatly to the beauty and grace of rowing. The best oars are of Norway fir; though some good oars are made of ash and beech. OAR, v. to row; to impel by rowing. OAR'ING, imp. OARED, pp. *ōrd*: ADJ. furnished with oars. OARY, a. *ōr'ī*, having the form of oars. OARSMAN, n. *ōrēmān*, one who pulls at the oars. OAR-WEED, one of the larger sea plants, having stout woody stems and broad ribbon-like leaves; the genus *Lamināriā*, ord. *Algæ*. TO BOAT THE OARS, to cease rowing and lay the oars in the boat. TO LIE ON THE OARS, to cease pulling by merely raising them out of the water; to cease from work of any kind for a time; to rest. TO MUFFLE THE OARS, to wrap some soft substance around that part which rests in the row-lock to prevent noise in rowing. TO UNSHIP THE OARS, to take them out of the row-locks.

OAR-FISH—OASIS.

OAR-FISH : the largest deep sea fish known; belongs to the family of ribbon fishes (*Trachipteridæ*). Its body is much elongated and compressed, its length being about 15 times its depth; the head, compressed and short, resembles that of a herring; the eye is large, mouth small, and teeth feeble; a many rayed dorsal fin, whose anterior rays form a crest, extends from the top of the head to the end of the tail; the anal and caudal fins are absent, but the ventrals (its distinguishing feature) are developed into a pair of long filaments paddle-shaped at the end. Most of these fishes measure 12 ft. in length, some exceeding 20 ft. They range everywhere in the ocean depths, but only about 20 captures have been made in a century and a half.

OASIS, n. *ô-â'sîs*, **OASES**, n. plu. *ô-â sîz* [Gr. *ôâsis*, a very fertile spot]: fertile spot occurring around springs in a barren sandy desert; originally the name of the fertile islets in the Libyan desert (called also *Auasis*, *Ouasis*, or *Hoasis*). The principal oases are those w. of Egypt, a few days journey from the Nile, and known to the ancients as the Greater and Lesser Oases, and the oasis of Ammon. It is supposed that they were known to the Egyptians during the 12th dynasty under the name of *Suten Khenn*, but no evidence of their occupation by the Egyptians earlier than Darius has been found *in situ*. By some of the ancients they were called the Islands of the Blessed, or compared to the spots on a panther's skin. Their name is supposed to be the Coptic *Ouahé* (Inhabited Place). They are mentioned first by Herodotus in his account of the destruction of the army of Cambyses by the storm of sand, or simoom. Equally celebrated is the visit of Alexander the Great to the O. which he successfully accomplished after the conquest of Egypt, and passed through the desert a nine days' journey before he reached the Temple of Ammon, the priests of which declared him the son of that god, and the future conqueror of the entire world. Herodotus describes the oasis of El Wab, the O. Magna of the Romans, which contained the oracle of Ammon, seven days' journey w. of Thebes. It appears to have been anciently frequented by caravans going to the Pillars of Hercules. Strabo mentions three oases: the first seven days' journey w. of Abydos; the second, w. of the Lake Mœris; the third, near the oracle of Ammon. Pliny mentions two oases; so does Ptolemy, who calls them the Less and Greater. Under the Roman empire, they were used for temporary banishment of criminals of state, and the poet Juvenal was sent there. Olympiodorus, native of the Thebaid, gives a glowing description of them in the days of Theodosius the Younger. Under the Byzantine emperors, the emperors banished there the heads of the Catholic party, at the instigation of the Arians, in the 4th c., and Athanasius himself is supposed to have taken refuge in them. In the 5th c., Nestorius, Bp. of Constantinople, was banished there. He was rescued by an excursion of the Blemyes, but expired soon after his arrival at the Nile. The oases were then a place of desolation and horror, occasionally plundered by Bedouins.

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They fell into the power of the Arabs, 943, after having been held by the Egyptian monarchs and their successors till that period; and they are described by Edrisi (1150) as uninhabited; by Abulfeda (1240) and by Leo Africanus (1513), as inhabited and cultivated, and quite independent, having three fortresses. The first modern traveller who visited them is supposed to have been Poucet (1698). Subsequently, 1792, Browne discovered the O. of Ammon at El Siwah; and it was visited 1798 by Hornemann, and 1819 by Cailliaud. It lies in $29^{\circ} 12' 20''$ n. lat., and $26^{\circ} 6' 5''$ e. long. Drovetti and Minutoli also visited the spot.



Temple of Jupiter Ammon—Oasis of Siwah.
(From Hoskin's *Visit to the Great Oasis.*)

These oases are now held by Muggrebi Arabs, a powerful race in the Desert, capable of raising 30,000 men, who supply camels and guides to travellers. The principal oases are: 1. El Khargeh, or the O. Magna, the Greater Oasis of Ptolemy; 2. El Kasr, or O. Parva, the Lesser Oasis; 3. Siwah, or the O. of Ammon, the most northerly; 4. The Western O., or Dakkel, mentioned by Olympiodorus, and visited by Sir Archibald Edmonstone 1819 and Rohlfs 1874. Of El Khargeh, full particulars have been given by M. Hoskins, who discovered it about 125 m. w. of the Nile, having a stream of water rising near the village of Genah, on the n.w. of the O., and lost in the sand. It is bounded e. by Hagel-bel-Badah. N. of El Gem lies the metropolis, El Khargeh, which consists of a series of covered streets and open bazaars. The temple lies two hours' journey from it. in a fine situation; the *sekos* has a vestibule of 500 ft., with pylons or gateways, the first of which has a decree in Greek, dated in the reign of Galba (A.D. 68), against forcing persons to farm the revenue, preventing imprisonment for debt, preserving the dowries of women, and limiting the office of strategos for three

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years. The temple has other decrees preventing the officers of govt. from smuggling. It has an avenue of sphinxes and three pylons; on the third, Darius is represented offering to Amen Ra, Osiris, and Isis; while Nekht-her-hebi (Nectabes) continued the ornaments of the temple about B.C. 414-340. The sekos is 140 ft. long, and represents Darius offering to Amen Ra, or Khnumis, the ram-headed god, and Osiris; while in the accompanying scenes are Anka, or Anaitis, Raspu, or Reseph. In the vicinity is a magnificent necropolis of 150 sepulchres, of a late period, with Doric and Corinthian capitals. There are several temples at other spots of the oases. 2. El Kasr, the O. Parva, lies four or five days' journey s.e. of Siwah, called the Wah-el Bahnasa, or Wah-el-Menesheh, contains no monuments older than the Roman, consisting of a triumphal arch, subterraneous and other aqueducts, several hot springs, a necropolis, and Christian church. This O. was first conquered by the Arabs; and in its vicinity is another O. called Wady Zerzoora, with others adjoining, of inferior interest. 3. Siwah, or the O. of Ammon—one of the first discovered, and repeatedly visited, has, unfortunately, not been seen by any one acquainted with hieroglyphics; it lies w. of the Natron Lakes. It appears from Minutoli that the temple was built by Nekht-her-hebi, or Nectabes I., in honor of the god Khnum Ammon Khnumis or Chnebis, who, as the deity of water, presided over the water which gave the O. its origin. The O. is nine m. broad and two m. long, contains El Garah Gharmy, and Menchyeh, has a population of about 8,000 inhabitants, possesses date and other trees, grows cereals, and has sulphurous springs, a salt lake at Arachieh, and many ruined temples, a necropolis, and other remains. The oracle of Ammon is supposed to have been at a place called Om-Beydah, or the temple of Nekht-her-hebi. From this, it seems that the O. did not fall into the power of Egypt till about B.C. 5th c. The celebrated Fountain of the Sun is at Siwah Shargieh; 30 paces long, 20 broad, six fathoms deep, with bubbles constantly rising to the surface, steaming in the morning, and warmer at night. Close to it are the remains of the sanctuary of Ammon. 4. El Dakkel, or the W. Oasis, lies about 78 m. s.w. of Siout. The principal ruin at Dar-el Hadjar consists of a small temple, dedicated to Khnumis by the Roman emperors, Nero and Titus. At Ain Amoor, between this O. and the O. Magana, is a temple built under the Roman empire. The kingdom of Air (q.v.) or Asben, is practically an oasis, and one of the largest in the e. Sahara; it is a table-land with average elevation 2,000 ft., 180 m. long from n. to s. Its fertility is due to the heavy tropical rains precipitated by this elevation of land.—Herodotus, iii. 26; Strabo, ii. 130, xvii. 790, 791, 813; Ptolemy, iv. 5, 37; Minutoli, *Reise zum Tempel des Jupiter Ammon* (Berlin 1824); Hoskins, *Visit to the Great Oasis* (8vo, Lond. 1837); Champollion, *L'Egypte*.

OAST, n. *ōst* [Dut. *ast*, *est*, or *eest*, a kiln: comp. *eit*, a fire, an oven]: a kiln to dry hops or barley malted. OAST-HOUSE, a building for oasts or hop-kilns.

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OAT, n. *ōt*; usually in the plural, OATS, *ōts* [AS. *āta*: Fris. *oat*, oat: AS. *æt*; Icel. *ata*, food]: well-known plant and its seed; a grain, one of the cereals. OATEN, a. *ōt' n*, made of oats or oatmeal. OAT-CAKE, a cake made from the meal of oats. OATMEAL, oats dried, shelled, and coarsely ground. WILD OATS, loose or wild habits of young men. TO SOW ONE'S WILD OATS, to indulge in loose habits or forbidden pleasures. TO HAVE SOWN ONE'S WILD OATS implies the abandonment of wild and loose habits; to have become steady and well conducted. *Note*.—Skeat connects AS. *āta* with Icel. *eitill*, a nodule in stone; Norw. *eitel*, a gland, a knob.—Oats (*Avēna*) are a genus of grasses, order *Gramineæ*, containing many species, among which are some valuable for the grain which they produce, and some useful for hay. The Linnæan genus *Avēna*, less natural than most of the Linnæan genera, has been much broken up. The genus, as now restricted, has the spikelets in loose panicles, the glumes as long as the florets and containing two or more florets, the paleæ firm and almost cartilaginous, the outer palea of each floret, or of one or more of the florets, bearing on the back a knee-jointed awn, which is twisted at the base. The awn, however, tends to disappear, and often wholly disappears in cultivation. Those species cultivated as grain plants have comparatively large spikelets and seeds, the spikelets—at least after flowering—pendulous. The native country of the cultivated oats is unknown, though probably it is central Asia. There is no reference, however, to the oat in the Old Testament; and though it was known to the Greeks, who called it *Bromos*, and to the Romans, it is probable that they derived their knowledge of it from the Celts, Germans, and other northern nations. It is a grain better suited to moist than to dry, and to cold than to warm, climates, though it does not extend so far north as the coarse kinds of barley. The grain is used either in the form of Groats (q.v.) or as made into meal. Oatmeal cakes and porridge form great part of the food of the peasantry of Scotland and of some other countries. No grain is so much esteemed for feeding horses. Besides a large quantity of starch—about 65 per cent.—and some sugar, gum, and oil, the grain of oats contains almost 20 per cent. of nitrogenous principles, or Proteine (q.v.) compounds, of which about 16 or 17 parts are *Avenine*, a substance very similar to *Caseine* (q.v.), and two or three parts gluten, the remainder albumen. The husk of oats also is nutritious, and is mixed with other food for horses, oxen, and sheep. From the starchy particles adhering to the husk or *seeds* after the separation of the grain, a light dish called *sowans*, made in Scotland by means of boiling water, was formerly very popular, and is suitable for weak stomachs. The grain is sometimes mixed with barley for distillation. The Russian beverage called *quass* is made from oats. The straw of oats is very useful as fodder, bringing a higher price than

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any other kind of straw.—The varieties of oats in cultivation are very numerous, and some highly esteemed varieties are of recent and well-known origin. It is doubtful if they really belong to more than one species; though the following are generally distinguished as species: 1. COMMON OAT (*A. sativa*), having a very loose panicle, which spreads on all sides, and two or three fertile florets in each spikelet, the paleæ quite smooth; not more than one floret awned; 2. TARTARIAN OAT (*A. orientalis*), called also HUNGARIAN OAT and SIBERIAN OAT, distinguished chiefly by having the panicle much more contracted and all turned to one side; 3. NAKED OAT (*A. nuda*), differing from the Tartarian Oat chiefly in having the paleæ very slightly adherent to the seeds, which, therefore, fall readily out of them, while in the other kinds they adhere closely; 4. CHINESE OAT (*A. chinensis*), which agrees with the last in the characters of the paleæ and seeds, but is more like the Common Oat in its panicle, and has more numerous florets, 4–8, in the spikelet; 5. SHORT OAT (*A. brevis*), which has a close panicle turned to one side, the spikelets containing only one or two florets, each floret awned, the grains short. Almost all the varieties of oat in cultivation belong to the first and second of these species. The Naked Oat is cultivated in Austria, but not much esteemed. The Chinese Oat, said to have been brought by the Russians from n. China, is prolific, but the grain is easily shaken out by winds. The Short Oat is cultivated as a grain crop on poor soils at high elevations in mountainous parts of France and Spain, ripening where other kinds do not; it is also cultivated in some parts of Europe as a forage plant.—Besides these, there is another kind of oat, the BRISTLE-POINTED OAT (*A. strigosa*), regarded by some botanists as belonging even to a distinct genus, *Danthonia*, because the lower palea is much prolonged, and, instead of merely being bifid at the point, as in the other oats, is divided into two long teeth, extending into bristles. The panicle is inclined to one side, very little branched; the florets, 2 or 3 in a spikelet, all awned, the grain rather small. This plant is common in corn-fields, is cultivated in many countries, but chiefly on poor soils, and is now scarcely seen as a crop in Scotland, where formerly it was much cultivated.—Not unlike this, but with the panicle spreading equally on all sides, the outer palea merely bifid, and long hairs at the base of the glumes, is the WILD OAT (*A. fatua*), also frequent in corn-fields, and a variety of which is cultivated in some northern countries for meal; but which is usually regarded by farmers as a weed to be extirpated, springing up so abundantly in some districts as to choke crops of better grain. Its awns have much of the hygrometrical property which gains for *A. sterilis*, a species found in s. Europe, the name ANIMAL OAT, because the seeds when ripe and fallen on the ground resemble insects, and move about in an extraordinary manner through the twisting and untwisting of the awns. The

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seed of the WILD OAT has been sometimes used instead of an artificial fly for catching trout.—Among species of oat useful not for grain, but as fodder, are the DOWNY OAT-GRASS (*A. pubescens*) and YELLOW OAT-GRASS (*A. flavescens*), both referred by some botanists to the genus *Trisetum*—the short awn being like a middle tooth in the bifid palea—and both natives of Britain, the former growing on light ground and dry hills, especially where the soil is calcareous, the latter on light meadow-lands.—Other species are found in Britain, continental Europe, N. America, Australia, etc. In some parts of the Sahara are bottoms of ravines richly productive of a species of oat-grass (*A. Forskalii*) much relished by camels.



Wild Oat (*Avēna fatua*).

Oats can be grown on a great variety of soils; and, on land having only a small proportion of organic matter, will thrive better than wheat or barley. The yield is much greater on fertile soils than on those partially exhausted; but on too rich land, and on soils deficient in mineral matter, the plants are liable to fall upon the ground and involve the ruin of the crop. In warm localities, oats rapidly degenerate, and it is important frequently to obtain seed from colder regions. In some of the southern states what are called winter oats are cultivated. They are sown in the fall or winter, and are modifications of the ordinary varieties, caused by climatic conditions and the time of sowing, rather than any radical departure from the ordinary type. At the south they yield better crops than the spring sorts, but they are not hardy enough to endure the winters at the north. Considerable quantities of oats are used for food by rich and poor alike, but the grain is used mainly to feed to horses. It is valuable also for sheep and other farm stock. The straw is given to horses and cattle,

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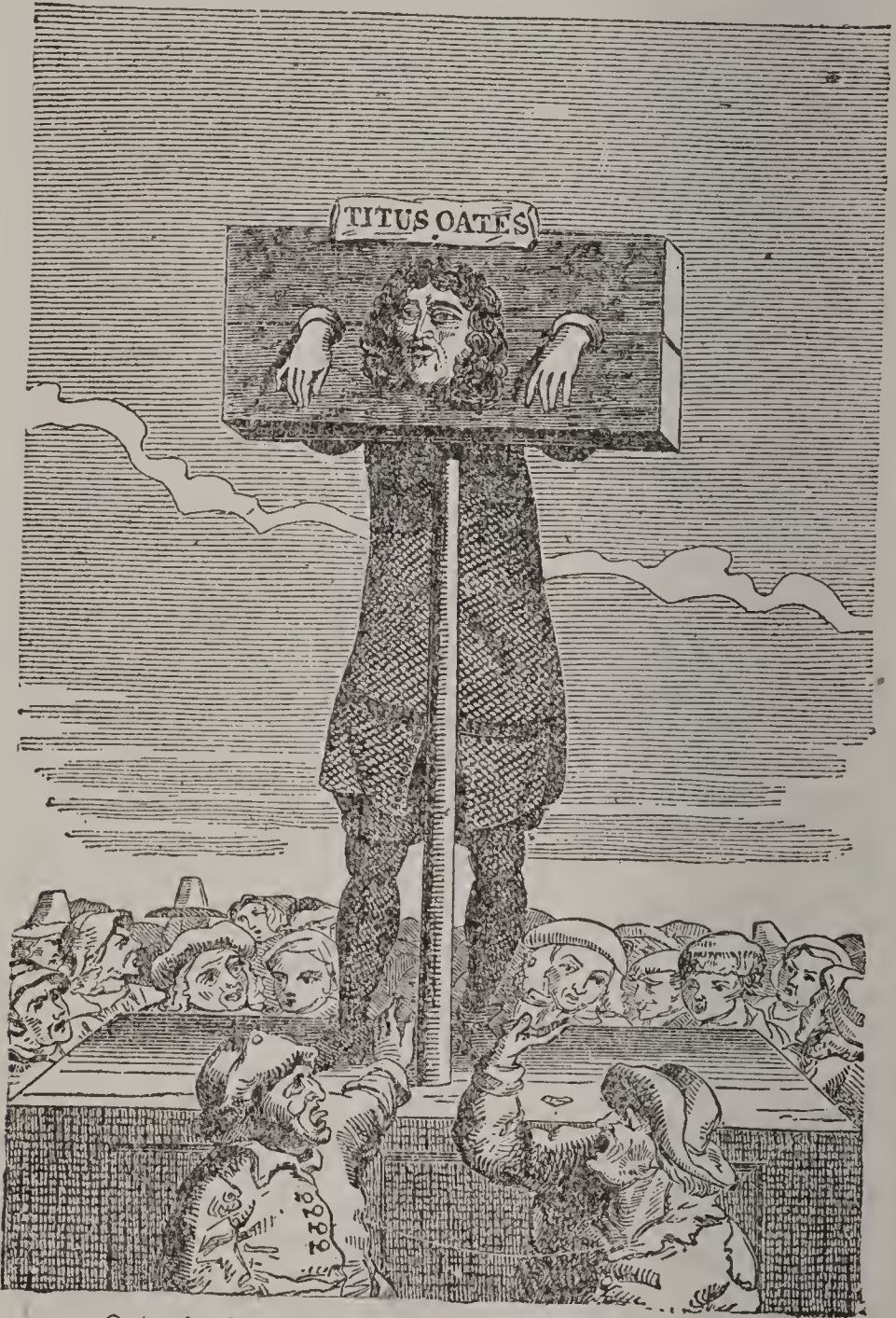
and has considerable feeding value. The land for oats should be thoroughly prepared, and the sowing should be done early in the season, so that the plants may make most of their growth before hot weather, and avoid the rust likely to follow late sowing. Two to four bushels of seed per acre are sown broadcast, or one and one-half to two bushels when drilled. Clean seed should be used, and a medium quantity will usually give larger yield than excessive seeding. The cutting should be done when the stalks turn yellow near the ground. If allowed to stand too long, much of the grain will shell in the field, and the straw will be injured for feeding purposes. As after it is cut the grain is discolored by rain, harvesting should, if possible, be done in clear weather. Thorough drying is necessary to prevent heating in the mow or stack. In most states the legal weight per bushel is 32 lbs. ; but the weight per measured bushel varies from 25 to 50 lbs., the heavier grain being mostly from varieties imported from n. Europe. Among the many varieties are the Hopetoun, Black Tartarian, and Excelsior, imported from Great Britain; and the Probst-eier, Pringle's American Triumph, and Hargett's White. The area devoted to oats in the United States, for the 10 years 1880-90, was nearly double that of the preceding decade. The largest quantity grown in any state, 1894, was 109,050,302 bushels, in Ill. The state of Io. produced 96,556,672 bushels. The other states producing over 40,000,000 bushels each were Wis. and Minn. N. Y. produced 30,320,758 bushels; O., 29,143,237; Mo. and Kan., each over 25,000,000; Penn., 26,226,740; Tex., 20,013,119; Ind., 35,809,040. The total quantity grown in the United States was 662,036,928 bushels. In the calendar year 1902 the production in the United States was 987,842,712 bushels, from 28,653,144 acres, the crop being valued at \$303,584,852. The most productive states were Illinois, 153,450,423 bushels; Iowa, 124,738,337 bushels; Wisconsin, 95,037,810 bushels; and Minnesota, 82,259,697 bushels.

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OATES, *ôts* (*alias* AMBROSE), TITUS : about 1650–1703, July 13; son of a ribbon weaver, who, according to one account, having become first an Anabaptist minister in the time of Cromwell, took orders and a benefice in the English Church after the Restoration. Titus appears to have been born in London. He was a pupil of Merchant Taylor's School, whence he passed to Trinity College, Cambridge, took orders, and received a small living from the Duke of Norfolk. This position, however, he forfeited, in consequence of a malicious prosecution set on foot by him, in which he narrowly escaped conviction for perjury; and having been afterward appointed to the chaplaincy of one of the king's ships, he was expelled from it on a charge still more disgraceful. In this extremity, he conformed to the Rom. Cath. Church, and was admitted as a scholar of the Jesuits' college at Valladolid; but was expelled for misconduct, after a trial of a few months. He was again received by the Jesuits, on his earnest protestations of repentance, at St. Omer, where he was again unsuccessful, and was finally dismissed by them early in 1678. He now, as a mere vagabond adventurer, set himself to live by his wits, in the evil exercise of which he devised, about this time, the atrocious scheme with which his name is identified in history. Just then, great excitement and alarm pervaded the Prot. party in England. It was well known that Charles was at heart a Rom. Cath.; and his brother, the Duke of York, afterward James II., was an active and avowed zealot on the same side. The growing confidence of the Rom. Catholics was unconcealed; and, with or without instant reason, the cry so often since heard arose, and was everywhere re-echoed, that the 'Protestant religion was in danger.' In this fevered state of general feeling, O. saw his opportunity. He communicated to the authorities the details of a pretended plot—the figment of his own brain—whose main elements were a rising of the Rom. Cath. party, a general massacre of Protestants, the burning of London, the assassination of the king, and the invasion of Ireland by a French army. In some of its items, the fiction was devised with considerable ingenuity to catch the popular belief. By strange coincidence, moreover, there just then occurred a series of events which seemed conclusively to attest its genuineness. A correspondence, the object of which was the propagation of the Rom. Cath. religion, came to light, between the sec. of the Duke of York and Père La Chaise, confessor and confidant of Louis XIV. Danby, the prime minister, it also appeared, had been busy with intrigues in the same quarter. Finally, Godfrey, the zealous Prot. magistrate through whom first publicity was given to 'the plot,' was found mysteriously murdered. After this, could reasonable doubt exist? Was not the English St. Bartholemew already begun? All London went wild with fear and rage; and it seemed at one time likely that a massacre of Rom. Catholics would be substituted for the dreaded

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extermination of the Protestants. The parliament, which might have done something to allay the excitement, was itself swept headlong away by it. The king alone—whose life was threatened, but who, dissolute and indolent as he was, wanted neither courage nor shrewdness—much to his honor, scornfully insisted that the plot was merely some insane delusion, and tried, so far



Oates in the Pillory.—From a Contemporary Print.

as he could, to control the excesses which followed. Probably his interference was of the characteristically easy, *insouciant* kind; in any case, it did not avail. The story of O. was universally believed; and he became the hero of the day. A pension of £600 (or £900) a year was granted him; a suite of apartments in the palace at Whitehall was set apart for his use; and wherever he

went, the Prot. public wildly cheered him as their savior. With the aid of a set of suborned ruffians, only one degree less foul than himself, convictions of his victims were readily obtained, judges and juries vying with each other in their unquestioning reception, in evidence, of the grossest and most manifest perjuries; and many innocent Rom. Cath. gentlemen died the death of traitors at the block. Over the space of two years, the base success of O. was signalized by a series of judicial murders. Naturally, however, as reason resumed its sway, doubts began to be felt; and on the execution of a venerable and respected nobleman, Viscount Stafford, public suspicion awoke with a strong shock of pity and remorse, and a violent reaction set in. It was only, however, on the accession of James II., 1685, that retribution overtook the malefactor. Active steps against him were then taken. He was tried before the court of king's bench, convicted of perjury, and sentenced to be pilloried, whipped at the cart's tail, and afterward imprisoned for life. The leniency of the sentence would be surprising if not explained: it was intended that the severity of the first two items of punishment should render the last one superfluous, and that the wretch should die under the lash of the executioner. But the hide of O. was beyond calculation tough; and horribly lacerated, yet living, his carcass was conveyed to the prison, from which it was meant never more to issue. Very strangely, however, the next turn of the political wheel brought new fortune to the monster. When the revolution of 1688, with the flight of James, placed William on the throne, the Prot. influence triumphed once more; and in the outburst of enthusiasm which ensued, what more natural than that the fickle public should glorify O. as a Prot. martyr? He appealed to parliament: the commons annulled his sentence; the lords, though admitting its injustice, confirmed it by a vote of 35 to 23; and the matter was settled by a royal pardon, with a pension of £300 a year. He passed his 17 remaining years in obscurity.

OATH.

OATH, *n.* *3th* [AS. *ath*; Goth. *aith*; Ger. *eid*, an oath]: a solemn declaration of truth-telling confirmed by an appeal to God as witness; a promise to do something confirmed by a solemn appeal to God: also, a profane ejaculation. **FALSE OATH**, a falsehood intensified in guilt by the appeal made to God.—*Oath*, in the religious use of the word, may be defined an expressed or implied calling upon the Almighty to witness the truth of an asseveration or the good faith of a promise; with which is ordinarily conjoined an imprecation of his vengeance, or a renunciation of his favor, in case the asseveration should be false or the promise be broken. This practice has prevailed, in some form, in almost all the religions of the ancient and the modern world. It supposes, however, a belief of the existence of a provident Supreme Being, in order to its moral efficacy as a safeguard of truth. Among the Jews are instances in Gen. xiv. 22, xxi. 24, xlvii. 31, l. 5, confirmed even by the example of God himself, Num. xiv. 28, Jer. xlv. 26, Is. lxii. 8. It was strictly forbidden to the Jews to swear by false gods (Amos viii. 14, Jer. xii. 16). The form of oath was probably variable—either a direct adjuration, as ‘The Lord liveth,’ or an imprecation, ‘The Lord do so to me;’ but in all cases the strongest denunciations are held out against the false swearer (Ex. xx. 7, Lev. xix. 12). Oaths were employed, both judicially and extrajudicially, by the ancient Egyptians, Assyrians, Medes, and Persians, as well as by the Greeks and Romans. The forms were very various—one of the most solemn consisting in the act of placing the hand on the altar of the deity invoked as witness. In the judicial proceedings of the Greeks and Romans, oaths were employed, but not universally; and in examples of their extrajudicial use the literatures of both abound. In the Christian dispensation, the solemnity of an oath is greatly enhanced by the elevated idea of the holiness, power, wisdom, and infinite perfection of the living God whom Christ reveals.

The lawfulness and fitness of the practice, under circumstances of due solemnity, are commonly recognized by Christians. Some communions, of which the most remarkable are the Moravians and the Society of Friends, applying literally the words of Christ (Matt. v. 34), regard all oaths as unlawful. But other communions generally restrict this prohibition to ordinary and private discourse; finding, in Rom. i. 9, II Cor. xi. 11, Gal. i. 20, Phil. i. 8, and I Thess. ii. 5, full warrant for the lawfulness of oaths in judicial and other solemn use. From some passages of the Fathers, it might seem that they shared the difficulties of the Quakers and Moravians on the subject of the lawfulness of swearing; but these Fathers for the most part referred to the oaths required of Christians by the pagans, which generally involved a recognition of particular pagan divinities; and they condemned these pagan oaths, rather as involving or even directly containing a profession of the popular

paganism, than as unlawful in themselves as oaths. The Christians of the later ages may perhaps be said to have multiplied in an opposite degree the occasions of oaths; especially of what were called 'purgatorial' oaths, in which a party charged with a crime justified himself by swearing his innocence. These oaths were commonly accompanied by some imprecatory form of ceremonial, and were often expected to be followed by immediate manifestations of the Divine vengeance upon the perjurer. The common instrument of attestation on O. was the Bible or some portion of it: but oaths were sometimes sworn on the relics of saints, or other sacred objects; sometimes simply by raising the hand to heaven, or by laying it upon the breast or the head. In canonical processes, the O. was often administered to the party kneeling. The forms varied very much, the most general being that which the English O. still retains (*Sic me Deus adjuvet*). Divines commonly state, in order to the lawfulness of an O., three conditions requisite (founded on Jer. iv. 2)—viz., *truth, justice, and judgment*—that is to say (1), that the asseveration, if the O. be assertive, shall be *true*; and that the promise, if the O. be promissory, shall be made and kept *in good faith*; (2), that the thing promised shall be objectively lawful and good; (3), that the O. shall be sworn not without due discretion and deliberation, and not without satisfactory reasons founded on necessity or at least on grave and manifest utility.

The Mohammedans do not employ oaths in their judicial proceedings; but they regard deliberate perjury, even when extrajudicially committed, as sinful and deserving of God's vengeance. For this, however, they require that the O. should be an express adjuration of God himself by some one of his well-known holy names; that the jurant should be of full age and intelligence; and that the O. should be sworn deliberately and with the intention of swearing.

OATH, in Law: that kind of solemn declaration necessary as a condition to the filling of some office more or less public, or of giving evidence in a court of justice. Nearly all the great public offices of the state in civilized countries can be filled by persons only who are willing to take an O. before acting in such office. The office of king or queen of Great Britain requires a Coronation Oath (q.v.). Members of parliament also require to take the oath of fidelity and true allegiance, and promising to maintain the succession. Quakers and others may make an affirmation to the same effect. In 1868, 9, and 71, great changes were made as to oaths in Britain. In the United States, all officials of state or national governments who hold functions of responsibility are generally required to take O. at entrance on their offices—usually of obedience to the constitution and laws, and of faithfulness to the duties involved. Among ancient armies, the taking of the military O. of fidelity and obedience was a very solemn procedure. A

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whole corps, sometimes an entire army, took the O. together. In modern armies, the multiplication of the means of discipline has reduced the O. to little more than a form.

Important oaths affecting the general public are those required to secure and enforce the truth from witnesses in courts of justice. Jurymen take an O., which is read to the juror, to this effect—‘ You shall well and truly try the issue between the parties, and a true verdict give, according to the evidence, so help you God ;’ and in the old (and a still common) practice the juror kisses the New Testament. A witness called to give evidence must be first sworn in a similar manner, the words being to this effect—‘ The evidence you shall give shall be the truth, the whole truth, and nothing but the truth, so help you God.’ Hence, a witness must have sufficient understanding to know the nature and obligations of an oath ; and, on this ground, young children are incompetent to be witnesses. The usual practice is, for the witness, after hearing the oath repeated by the officer of court, to kiss the four gospels by way of assent : but the details of formality vary in different countries, and in different states of the Union, and even according to the conscience or preference of individuals : thus, in Scotland, the witness repeats similar words after the judge, standing and holding up his right hand, ‘ swearing by Almighty God, as he shall answer to God at the Great Day of Judgment,’ but without kissing any book. Individuals who so prefer are sworn, in the United States, not with kissing any book, but ‘ by the Living God ’—a solemn and simple form. Jews are sworn on the Pentateuch, keeping on their hats, and the oath ends with the words, ‘ so help you Jehovah.’ A Mohammedan is sworn on the Koran ; a Chinese witness has been sworn by kneeling and breaking a china saucer against the witness-box. Thus, the mere form of taking the oath is immaterial ; the witness being allowed to take it in whatever form he considers most binding upon his own conscience.

The policy of insisting on the religious formalities attending the taking of an O. has been much discussed of late years in Great Britain and the United States ; and concessions have from time to time been made by the laws in both countries, in the direction of greater latitude. Till comparatively recent years, atheists and persons who admitted that they had no religious belief were excluded from giving evidence in courts of justice—which exclusion occasionally tended to frustration of justice. The objection of Quakers, Moravians, and some other separatists to taking the O. was long respected, as not being fundamentally at variance with a due sense of religious feeling ; hence they were allowed by statute to take an affirmation instead of the oath. A further concession was made to those who, not being Quakers, yet refused to take the O. from sincere conscientious motives, such also being allowed to affirm. Later, reference to religious tests was excluded where the judge

was satisfied that the taking of the O. would have no binding effect on the conscience of the person called to give evidence—such person being allowed to make an affirmation, in which he ‘solemnly promises and declares that the evidence given by him to the court shall be the truth, the whole truth, and nothing but the truth.’ In Great Britain, the right of a member of parliament to affirm instead of taking the usual oath was brought conspicuously before the British public 1880, when Mr. Bradlaugh, member for Northampton, refused to take the O., on the ground that the religious expressions made use of therein had no meaning for him. After a series of debates, a motion passed the house that Mr. Bradlaugh be allowed to make an affirmation; which he thereupon did, and took his seat. It was, however, decided by the law-courts that he was not entitled to make affirmation in this case; and though he afterward expressed his desire to take the O., a vote of the house declined to permit him. In 1883 the govt. brought in a bill permitting the affirmation in such cases, but was defeated by a small majority. In the new parliament, 1886, Mr. Bradlaugh did take the oath. In this country, a declared atheist must make an affirmation as a witness; and to testimony given on such affirmation the law of perjury applies, as to testimony on oath. In administration of the O., the mode is adopted which is most binding on the conscience of the witness.

When a witness, after being duly sworn, gives false evidence in a court of justice or in a judicial proceeding, and his evidence so falsely given is material, he commits the crime of Perjury (q.v.). As a general rule, this crime cannot be committed except in some judicial proceeding; or, rather, the giving of false evidence cannot be punished except it has been given in some judicial proceeding.

Unlawful oaths generally mean oaths of treasonable character taken by members of secret and illegal societies, or oaths binding to the commission of murder or other unlawful act. OATH OF CALUMNY, in Scotch law, oath taken by a party, at the instance of his opponent, that the allegations were well founded. OATHS OF VERITY AND CREDULITY are oaths that a debt or claim is well founded.

OAXACA: see OAJACA.

OB, *ōb* [L. *ob*, in front, before, against]: a prefix meaning ‘in the way of; against; toward,’ as in *obviate*; *ob* becomes *oc* before *c*, as in *occasion*; *of* before *f*, as in *offend*; *o* before *m*, as in *omit*; and *op* before *p*, as in *oppose*: in *bot.*, *ob* means ‘reversed’—thus: ‘*cordate*’ means heart-shaped, with the attachment at the broad end; ‘*obcordate*’ means heart-shaped, but with the attachment at the narrow end.

OB—OBAN.

OB, *ōb*, or **OBI**, *ō'bē*: great river of w. Siberia, whose two branches, the Bia and the Katune or Katunga, both have their origin in the Altai Mts., within the frontier of the Chinese dominions, about lat. 49° n. and long. 90° e. These branches, flowing n.w., unite to form the Ob at the town of Biisk, in lat. 52° 30' n., long. 85° e. By a winding course, generally n.w., the Ob reaches the meridian of 75° e., when it turns w. and maintains that direction to its confluence with the Irtysh, the greatest of its tributaries. It then flows n.w., n., and n.e., to its mouth in the Gulf of Ob, which it reaches after a course of 3,000 m. Its chief affluents on the right are the Tom—a swifter stream than the Ob, 400 m. in length, and navigable for the last 280 m. from the beginning of May till July—the Tchulim, and the Ket. The principal affluent on the left is the Irtysh, which, rising within the frontier of the Chinese territories, traverses the Altai Mts., and, after a course longer than that of the Ob itself, joins that river 250 m. below Tobolsk. The trade of the Irtysh, of which the centre is Tobolsk, is important. The principal towns on the banks of the Ob are Narim, Surgut, Berezov, and Obdorsk.—The Gulf of Ob is a great inlet of the Arctic Ocean, 450 m. long by about 100 m. wide. At present, only a few steamers ply on the great water-system of the Ob; but that system, communicating as it does between Siberia, the Chinese territories, and European Russia, is, without doubt, destined to become a great commercial thoroughfare. The explorations of Prof. Nordenskjöld, and especially the tentative voyages of Capt. Wiggins 1874 and 76, from Dundee through the Kara Sea to the Gulf of Ob, have amply proved the feasibility of this direct route. This river is very rich in fish. Below its junction with the Irtysh, it divides itself into several parallel streams; and in the flood season it inundates great tracts of country, and presents the appearance of a waste of waters, its desolate uniformity broken only by the occasional tree-tops that rise above the surface. At Obdorsk, about 20 m. s. of the s. border of the Gulf of Ob, the river freezes in the middle of Oct., and breaks up about the middle of May.

OBADIAH, *ō-ba-dī'ah*: fourth of the 'minor prophets' of the Old Testament, regarding whom absolutely nothing is known. His book or 'vision'—the shortest of the Jewish Scriptures—appears, from internal evidence, to have been composed after the destruction of Jerusalem by the Chaldeans, B.C. 588, and consists of two parts. The first is a prophecy of the downfall of Edom. The second foretells the future redemption and glory of the house of Jacob, in which Edom—for his unbrotherly conduct—shall not share, but, on the contrary, be burned up as 'stubble.'

OBAN, n. *ō'bān* [Japanese]: principal gold coin of Japan, value about \$19.84.

OBAN—OBEDIENCE.

OBAN, *ō'bān*: parliamentary burgh and seaport, Argyleshire, Scotland, on the bay of O., 20 m. (in direct line) n.w. of Inveraray. The bay is protected from every wind by the island of Kerrera, on the w., and by the high shores of the mainland, and is overlooked on the n. by the picturesque ruins of Dunolly Castle. It is 12 to 24 fathoms deep, and, though the girdle of hills that seems to surround it gives it the appearance of a lake, it is easily accessible, and could afford anchorage to 300 sail. O. is the great rendezvous for tourists in the w. Highlands. The burgh now contains a number of churches, several hotels and inns, schools, banks, etc. Within three m. of O. is Dunstaffnage Castle, said to have been the seat of the Scottish monarchy before its transference to Scone. The Stone of Destiny, which now supports the coronation chair in Westminster Abbey, and was carried thither from Scone by Edward I., was brought from Dunstaffnage Castle. A railway from Callander, connecting O. with Edinburgh and Glasgow, was opened 1880. Pop. of O. (one of the Ayr group of parliamentary burghs) (1881) 4,046; (1891) 4,946.

OBCOMPRESSED, a. *ōb'kōm-prĕst'* [L. *ob*, reversed, and Eng. *compressed*]: in *bot.*, flattened in front and behind, not laterally.

OBCONICAL, a. *ōb-kōn'ī-kāl* [L. *ob*, reversed, and Eng. *conical*]: conical, but with the apex downward.

OBCORDATE, a. *ōb-kōr'dāt* [L. *ob*, reversed, and *cor*, the heart]: heart-shaped, but inverted.

OBDURATE, a. *ōb'dū-rāt* [L. *obdurus*, hardened—from *ob*, against; *durus*, hard]: hardened in heart; stubborn; callous; obstinate in wickedness. **OB'DURATELY**, ad. *-lī*. **OBDURACY**, n. *ōb'dū-rā-sī*, or **OB'DURATENESS**, n. *-nēs*, the state of being obdurate; invincible hardness of heart; obstinacy.—**SYN.** of 'obdurate': hardened; obstinate; pertinacious; contumacious; hard; firm; unbending; inflexible; unyielding; impenitent; unfeeling; unsusceptible; insensible; in *OE.*, harsh; rugged.

O'BEAH, or **O'BEA**: see **OBI**.

OBE'DIENCE, in Canon Law: the duty by which the various gradations in ecclesiastical organization are held subject, in all things consistent with the law of God or of the church, to the several superiors placed immediately above each, respectively, in the hierarchical scale. Thus priests and inferior clergy owe canonical O. to the bishop, and priests are bound thereby by a solemn promise administered at ordination. The bishop anciently took a similar oath to the metropolitan; but by the modern law, the jurisdiction of the metropolitan is confined to the occasions of his holding a visitation or presiding in the provincial synod. Bishops, by the present law of the Rom. Cath. Church, take an oath of O. to the pope: this O., however, is limited strictly by the canons, and is held to bind only in things consistent with the Divine and natural law. In ecclesiastical history, the word O. has a special signification,

OBEDIENT—O'BEIRNE.

and is applied to the several parties in the church which, during the great Western Schism (q.v.), adhered to the rival popes. Thus we read of 'the Roman Obedience,' which included all who recognized the pope chosen at Rome, and 'the Avignon Obedience,' which meant the supporters of the Avignon pope. So, again, historians speak of 'the Obedience of Gregory XII.' and 'the Obedience of Benedict XIII.,' etc. Applied to the monastic institute, O. means the voluntary submission which all members of religious orders vow, at their religious profession, to their immediate superiors, of whatever grade, in the order, as well as to the superior-general, and still more to the rules and constitutions of the order. This forms, in all orders, one of the essential vows. It is, however, expressly confined to lawful things; and though it is held that a superior can command certain things under pain of sin, yet Rom. Catholics repudiate the notion that the command of a superior can render lawful, much less good, a thing which is, of its own nature or by the law of God, sinful or bad. The name O. is sometimes given to the written precept or other formal instrument by which a superior in a religious order communicates to one of his subjects any special precept or instruction—e.g., to undertake a certain office, to proceed on a particular mission, to relinquish a certain appointment, etc. The instruction is called an O., because it is held to bind in virtue of religious obedience.

OBEDIENT, a. *ō-bē'dī-ěnt* [OF. *obedient*—from L. *obediē'tem*, dutiful: It. *obediente* (see OBEY)]: compliant with law or duty; dutiful; willing to obey; submissive to constraint or control. OBE'DIENTLY, ad. *-lī*. OBE'DIENCE, n. *-ěns* [F. *obédience*—from L. *obediē'tiā*]: a willing compliance with what is required; submission to authority. OBE'DIENTIAL, a. *-ěn'shāl*, complying with commands. PASSIVE OBEDIENCE, in *Eng. hist.*, the unqualified obedience which, according to some, is due from subjects to the sovereign.—SYN. of 'obedient': yielding; compliant; submissive; respectful; observant; regardful.

OBEID', or EL OBEID': see IL OBEID.

O'BEIRNE, *o-bērn'*, THOMAS LEWIS, D.D.: 1748–1823, Feb. 15; b. Longford co., Ireland. He graduated from a Jesuit college in France, intending to enter the Rom. Cath. priesthood, but changed his religious views and entered the ministry of the Church of England. He was chaplain to Lord Howe's expedition to America, at the beginning of the revolution, officiated in St. Paul's Church, New York, 1776, held a political position in Ireland 1782, became bp. of Ossory 1796, and two years later was placed over the see of Meath. He published three vols. of sermons, a poem on *The Crucifixion*, various political tracts, and a *Vindication* of the course pursued in America by his friends and patrons, Gen Sir William Howe and Lord Admiral Howe. He died in County Meath, Ireland.

OBEISANCE—OBELISK.

OBEISANCE, n. *ō-bā'sāns* [OF. *obeisance*; F. *obéissance*, obedience—from L. *obediē'tiā*, obedience; *obediens*, dutiful—from *obēdiō*, I hearken or listen to]: a bow; a movement of the body expressive of deference.

OBELISK, n. *ōb ě-lisk* [F. *obelisque*—from L. *obēliscus*; Gr. *obēliskos*, a spit or broach, an obelisk (see **OBELUS**): four-sided or prismatic monument of stone and like materials, gradually tapering as it rises, and assuming at the top a pyramidal or pointed form. The name is given also to a reference mark in printing, thus †, called also a dagger. *Note*.—A connection has been suggested of *obelisk* with anc. Egyptian *ob* or *aub*, a serpent; also with 'an obsolete Gael. *ob*, the serpent; Gael. *leigh*, a stone, a sacred stone.—Rude stone pillars were in many lands not only venerated, but worshipped, in prehistoric times, either as the 'powers of nature,' or in 'sun-worship,' 'serpent-worship,' or 'arkite-worship'—see Dr. C. Mackay. These pillars, called *tekhen*, were placed upon bases before gateways of the principal temples in Egypt, one on each side of the door. They served in Egyptian art for the same purposes as the stelæ of the Greeks and the columns of the Romans, and appear to have been erected to record the honors or triumphs of the monarch. They have four faces, are cut out of one piece, and are broader at the base than at the top, at a short distance from which the sides form the base of a pyramidion, in which the obelisk terminates. They were placed upon a cubical base of the same material, which slightly surpassed the breadth of their base. Each side of the obelisks at the base measures $\frac{1}{10}$ of the height of the shaft, from the base-line to that where the cap, or pyramidion, commences. The cap is also $\frac{1}{10}$ of the same height. Their sides are slightly concave, to increase their apparent height. Their height varies from more than 100 ft. to a few inches, the tallest known being that of Karnac, 105 ft. 7 inches. The sides are generally sculptured with hieroglyphs and representations, recording the names and titles of kings, generally in one line of deeply cut hieroglyphs down each side. The pyramid of obelisks was sometimes decorated with subjects. The mode by which they were made appears to have been to hew them first in the rough out of a solid piece in the quarries, and one unfinished specimen thus prepared still remains in the quarries of Syene. They were transported down the Nile during the inundation, on rafts, to the spot where they were intended to be placed, and raised from their horizontal position by inclined planes, aided by machinery. Some obelisks, before their erection, had their pyramid capped with bronze gilded, or gold, the marks of such covering still being evident on their surfaces. Under the Roman empire, they were raised by pulleys and heavy tackle. The difficulty of erecting the fallen ones in the ages of the renaissance, as also the mechanical appliances for lowering from its original site the obelisk of Luxor 1831, and erecting it in the Place de la Concorde, Paris, 1833, by Le Bas, show the difficul-

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ties overcome by the ancients. The use of obelisks is as old as the appearance of art itself in Egypt; these grand, simple, and geometric forms being used in the 4th dynasty, and continued till the time of the Romans. Their object is enveloped in obscurity. At the time of the 18th dynasty, it appears that religious ceremonies and oblations were offered to the obelisks. Their sepulchral use is evinced by their discovery in the tombs of the 4th dynasty and by the vignettes of early papyri.

No large obelisk is older than that of Matarieh or Heliopolis, erected by Osortesen I. about B.C. 1900; and that of Beggig or Crocodilopolis is, in reality, only a stele. Thothmes I. placed two of large size before the granite sanctuary of Karnac, and his daughter Hatasu two others more than 90 ft. high before the second propylæum. Additional sculptures were made on these obelisks by Sethos I., who restored them. Thothmes III. appears to have erected many obelisks. The oldest is that of the Atmeilan or Hippodrome of Constantinople. Two others, which formerly stood at Heliopolis, were subsequently re-erected by Rameses II. at Alexandria, and have been popularly known as Cleopatra's Needles. One of these, which long lay prostrate, was after an adventurous voyage brought to London 1878, and erected on the Thames Embankment. The other, 68 ft. in height, presented by the khedive to the United States, was brought to New York 1881, under superintendence of Commander H. H. Goringe, U. S. N., who fitted a vessel and machinery especially for its transport. It was set up in Central Park, the expense of its removal and erection being defrayed by William H. Vanderbilt of New York. The address at its public opening was by William M. Evarts. The four pyramid-tops are covered with hieroglyphics, of which those on three faces are legible, dating from the time of Thothmes III. In the middle spaces left vacant by Thothmes III., one of his descendants, Rameses II., 300 years afterward, inscribed his own name and titles. This monolith, whose inscriptions date earlier than 1,500 years before Christ, must have been looked on by Moses, and had become ancient, and its significance misty and doubtful, in the time of Augustus Cæsar. The highest of all obelisks, that of St. John of the Lateran, appears to have been removed from Thebes, and set up by Thothmes IV. A small obelisk of Amenophis II., said to have been found in the Thebaid, apparently from Elephantine, is in the collection of the Duke of Northumberland at Sion. Sethos I. commenced the Flaminian obelisk, subsequently completed by Rameses II., and placed at the temple of Heliopolis. It was removed to Rome by Constantius, and found 16 ft. under the surface in the pontificate of Gregory XIII., and erected in that of Sextus V. by the architect Fontana. The other obelisks of Rameses II. are: the one at the Luxor quarter of Thebes, the companion of which was removed to the Place de la Concorde at Paris 1833; the two obelisks of San or Tanis;

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that of the Boboli gardens of Florence, transported from the Circus of Flora at Rome; the obelisk of the Rotonda at Rome, erected by Clement XII., 1711; and that of the Villa Mattei, which decorated the Ara Cœli of the Capitol. A fragment of another obelisk was in the Collegio Romano. No obelisks are known of other monarchs till the 20th dynasty. That of the Monte Citorio at Rome, erected by Psammetichus II. at Heliopolis, was transported by Augustus to the Campus Martius, having been exhumed 1748. Two other obelisks of small size, made of black basalt, dedicated by Nekhtherhebi or Nectanebes II. at Hermopolis, commonly known as the obelisks of Cairo, are in the British Museum. Ptolemy Philadelphus is said to have erected in the Arsinoeum at Alexandria a plain obelisk of 80 cubits, cut in the quarries by Nectabis. It was set up by the architect Satyrus. Two obelisks, erected by Ptolemy Euergetes II. and his wife Cleopatra, stood before the temple of Philæ, one of which was removed to Corfe Castle. The so-called Pamphiliano obelisk at Rome, erected by E. Bernin 1651, in the Piazza Navona, under the pontificate of Innocent X., was removed from the Circus of Maxentius, having, as the hieroglyphical legends testify, been originally erected by Domitian before the Serapeum at Rome. The last of the Roman obelisks was the Barberini, found 1633 on the site of the Circus of Aurelian, and finally erected 1822 on the Monte Pincio. It was placed by Emperor Hadrian before the mausoleum or cenotaph either of himself or Antinous, A.D. 132-138. Barbarous hieroglyphs, found on the Salustian obelisk, are copied from the Flaminian obelisk. It is supposed to have been transported to Rome (unadorned with hieroglyphs) by Sallustius Crispus, prefect of Numidia, and to have been set up in the gardens of Sallust in the reign of Vespasian. It was erected by Antinori, 1789, before the Church of Trinita del Monte. It has been seen how, on the renaissance of the arts, the obelisks were restored and applied to the embellishments of modern Rome, either as columns in the centre of piazzas or squares, or else as the ornaments of fountains; one obelisk being set up alone in the centre of the piazzas and places of Italy and France, while in antiquity they always stood in pairs before the pylons.

Two small obelisks, and the apex of a third, have been found in Assyria, in shape of truncated prisms, the apexes step-shaped. The most interesting is that of the n.w. palace of Nimrûd, of black marble, 5 ft. 9 in. high. Each side has five compartments of bas-reliefs, representing the tributes and offerings made to the Shalmaneser. It is covered with a cuneiform inscription, recording the annals of the king's reign, from his 1st to his 31st year. On it is represented the tribute of Jehu, King of Israel. A second obelisk, of white marble, measures 8 ft. 2 inches high, is covered with bas-reliefs, representing scenes of war and tributes, winding round it like those of a Roman triumphal column. On it is an

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inscription of Shamas-Pul. The broken apex of a third has a dedication from Ashur-izir-'pul II. An obelisk of Semiramis at Babylon is mentioned by Diodorus, and another of Aricarus was interpreted by Democritus. Under the Roman empire, obelisks were used as gnomons, placed in the public spaces, or erected in the *spina* of the *circi*. The first removal of obelisks to Rome was in the reign of Augustus, who placed in the circus one said to have been erected originally in the reign of Semempser-teus, 85½ ft. high; and another, 9 ft. less, in the Campus Martius: he had the latter adjusted as a gnomon by the mathematician Facundus Novus. A third obelisk was erected in the Circus of Caligula and Nero in the Vatican, and originally dedicated to the sun by Nuncoreus, son of Sesostris, on the recovery of his sight. Two other small obelisks, which decorated the mausoleum of Augustus, and were erected by Claudius



Obelisks in Front of a Temple.

or Vespasian and his sons, have been found. Other obelisks are known to have been removed by Constantius, A.D. 354. P. Victor, in his description of the quarters of ancient Rome, reckons 6 of the largest size and 42 others. The Romans added to them brazen spheres and other decorations. Some were removed to Constantinople by Theodosius the younger and Valentinian, A.D. 390. The translation of the inscription of one of the Roman obelisks, made by a Greek or Egyptian named Hermapion, has been preserved by Ammianus Marcellinus.—Kircher, *Œdipus Ægyptiacus* (III. Rom. 1652–54); Zoega, *De Origine et Usu Obeliscorum* (1797); Cipriani, *Sui Dodici Obelisci di Roma* (1823); L'Hôte, *Notice Historique sur les Obeliskes Egyptiens* (1836); Birch, *Notes upon Obelisks* (1853); Sir Erasmus Wilson's *Cleopatra's Needle* (1878); Lieut. Gorrings's *Egyptian Obelisks* (1882).

OBELUS—OBERLIN.

OBELUS, n. *ôb'ê-lûs* [L. *obêlus*; Gr. *obêlos*, a spit, a mark shaped like a spit placed opposite suspected passages in a book]: in *anc. MSS.*, the mark (—) or (÷) inserted, particularly in those of the Septuagint, to indicate that the passage so marked is not found in the Hebrew; the line thus (—) in modern writing is employed to mark the place of a break in the sense where it is suspended, or when some awkward grammatical transition is made, but is often used instead of a (;) or (:).

OBER-AMMERGAU, *ô'bér-âm'mér-gow*: village in the valley of the Ammer, among the mountains of upper Bavaria. Pop. (1880) 1,349. The people are employed mainly in toy-making, and in carving crucifixes, rosaries, and images of saints. See MYSTERIES AND MIRACLE-PLAYS.

OBERLIN, *ô'bér-lîn*: village in Russia tp., Lorain co., O.; on the Lake Shore and Michigan Southern railroad; 34 m. s.w. of Cleveland, 22 m. e. of Norwalk. It is a quiet, pleasant, and well-ordered village, known as the seat of Oberlin College (q.v.). It contains 6 churches, 1 national bank, 2 newspapers, and a hotel. There are several manufactories, including saw, planing, and flour mills, a carriage factory, and a machine-shop. Pop. (1880) 3,242; (1890) 4,376; (1900) 4,082.

OBERLIN, *ô bér-lîn*, Ger. *ô bër-lên*, JOHANN FRIEDRICH: 1740, Aug. 31—1826, June 1; b. Strasburg: distinguished for active benevolence and usefulness. He studied theol. at Strasburg, and 1766 became Prot. pastor of Waldbach, in the Ban de la Roche or Steintal, a wild mountainous district of Alsace. Here he spent the remainder of his life, combining an affectionate diligence in the ordinary duties of the pastorate with wise and earnest endeavors for the education and general prosperity of the people. The district had suffered terribly in the Thirty Years' War, and the scanty population which remained was sunk in poverty and ignorance. O. introduced better methods of cultivating the soil, and various branches of manufacture: he incited the peasantry to construct roads and bridges, setting the example by working on them with his own hands. He founded an itinerant library, and established infant schools—the first on record. The population, scarcely 500 when he entered on his labors, had increased to 3,000 at the close of the century. Animated in all his actions by the most pure and disinterested piety, he carried his moral supervision over his child-like parishioners so far beyond ordinary bounds that he kept a register of their moral character, and searched with the minuteness, though not the motives, of an inquisitor, into the least important details of their private life. O. was ably assisted in his labors, especially for education, by his pious housekeeper, Luise Schepler, who survived her master 11 years. Notwithstanding the humble sphere in which his days were spent, his fame as philan-

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thropist has extended over the world, and his example has stimulated and guided many. See *Brief Memorials of Oberlin*, by the Rev. T. Sims, M.A. (London 1830), *Memoirs of Oberlin* (1852), biography by Bodemann (1868), and that by Spach (Paris 1866).

OBERLIN COLLEGE: institution at Oberlin, O., 34 m. s.w. of Cleveland; named after Johann Friedrich Oberlin, German philanthropist; founded 1833, under evangelical Congl. auspices, and in its origin was associated with the anti-slavery movement, admitting students irrespective of color; it was also a pioneer in collegiate co-education of the sexes; but its strongest features were religious zeal and economic simplicity of life. There are now 11 buildings, the more recent having architectural attractiveness. These are: a chapel, with seats for 1,200; Council Hall, theological; the Cabinet (museum), French, and Society halls; Peters Hall, for the dept. of philosophy and the arts; Spear Library; Stewart Hall and Sturgis Hall, for young women, with dormitories for them named Talcott Hall and Baldwin Cottage. The theological dept. has a classical and an English course, and a Slavic branch to train missionaries for work in the United States. The dept. of philosophy and the arts has classical, philosophic, and literary courses; the preparatory dept. has an English course and a four years' classical. There is a school of drawing. The Conservatory of Music is noted for its success, and has a fine building, the gift of Dr. Warner of New York. The presidency is now vacant, by the resignation of Dr. Fairchild. In 1894-5 there were 1,422 students; 533 in the preparatory, 367 in the collegiate, 4 in the graduate, and 65 in the professional departments; there were 88 professors and instructors, 61 men and 27 women; the library contained 42,000 vols.; value of scientific apparatus and library, \$150,000; value of grounds and buildings, \$600,000; amount of productive funds, \$900,000; total income, \$135,227. In the theological dept. there were 106 students and 13 professors and instructors. This dept., while sharing in the common university funds, has a separate endowment of \$140,000. The spirit of the college was largely infused with that of the Rev. Charles G. Finney (see OBERLIN THEOLOGY), for many years its president; a goodly number of its professors have been men of wide reputation; and multitudes of its graduates have carried its devout influence and its earnest reformatory spirit everywhere. It is a centre of theological literature since the transference to it of the *Bibliotheca Sacra* from Andover; the editor-in-chief, Prof. G. F. Wright, is well known also as a scientific investigator and author.

OBERLIN THEOLOGY.

OBERLIN THEOLOGY: term applied especially to the doctrines of the late Rev. Charles G. Finney, for many years pres. of Oberlin Coll., Ohio. These are set forth in his *Lectures on Systematic Theology, embracing Lectures on Moral Government, together with Atonement, Moral and Physical Depravity, Regeneration, Philosophical Theories, and Evidences of Regeneration* (1847), also in Fairchild's *Elements of Theology*, and his *Moral Science* (1892). No prominent difference now exists between the teaching at Oberlin and that of the so-called new-school Calvinism; for, as is noticeable now, even the distinctions of new school and old are lost sight of in discussions of much more important questions—so that a substantial orthodoxy waives its points of difference. In fact, Oberlin—long accused of dangerous radicalism—now occupies a position of general conservatism. The opinions of Pres. Finney have, therefore, chiefly a historical interest. His power as a great revivalist had been in his forcible presentation of human responsibility; and his doctrinal system not unnaturally centred in the human will. He aimed to show that personal sin and holiness are purely voluntary, neither transmitted nor transferred; that repentance is an immediate possibility and duty, and is the change required for acceptance with God. It followed, in his view, that the work of the Holy Spirit and of the atonement is a moral influence. His philosophy is not always clear—e.g., in regard to the self-determination of the will; and he uses terms such as will, volition, preference, etc., rather indiscriminately and without fundamental definition. He defines moral obligation figuratively, only, as a bond or ligament. He states its 'foundation' as 'the reason or consideration that imposes obligation on a moral agent to obey moral law,' and does not hesitate to say that 'moral obligation respects the ultimate intention only'—that 'moral character belongs to the intention only.' Further, moral obligation requires something in the end chosen which renders it deserving of choice for its own sake. This end is 'the highest well-being of God and of the universe of sentient existences.' And this, in its last analysis, resolves itself into 'the satisfaction of universal mind, that results from having every demand of the being fully met.' The intrinsic good of this is a saving clause in respect to utilitarianism; it is an Edwardsian benevolent regard to the blessedness of the universe as obligatory, in some way irrespective of tendency. This view plainly differs from the old orthodoxy. Dr. Duffield remarked (review of Finney, *Bib. Repos.*, 1848): 'What can we know of the satisfaction of God, and the best interests of the universe, in the complicated relations of universal mind? Nothing, but as God himself has made them known.' He is the law-giver and the end. In further contrast is the ultimate nature of obligation, affirmed by Pres. Mark Hopkins. In regard to sanctification, the original teaching of Finney was that, while the will must be either in a benev-

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olent state or not, yet a remnant of sin could remain in the regenerate, and a kind of second conversion must remove this. This was the theory of 'perfectionism,' or 'higher life,' that widely spread itself and tended to create an inner or esoteric circle of Christians, with catch-words and much self-consciousness, and a tendency to depreciate ordinary piety. But this view gave place at Oberlin to the generally received one of continuous sanctification, modified by the idea of the unity of moral action, which, however, does not exclude the sometimes marked passage from a genuine experience with a 'legal' coloring to one of fuller, freer faith (Rom. vii., viii.). See *Oberlin Evangelist* (1839-62); *Oberlin Quarterly Review* (1845-6). For other phases of early Oberlin teaching, see writings of Dr. Asa Mahan (pres. 1835-50); *Scripture Doctrine of Christian Perfection* (1839); *System of Intellectual Philosophy* (1845); *Doctrine of the Will* (1846); and, for later ethics, Pres. Fairchild's *Moral Philosophy* (1869); *Moral Science* (1892).

OBERON, n. ō'bér-ŏn [derived by change of spelling from *Auberon*, more anc. *Alberon*—fr. Ger. *Alberich*, i.e., King of the Elves]: King of the Elves or Fairies, husband of Titania. O. is mentioned first as 'Roi du royaume de la féerie' in the old French poem *Huon de Bordeaux, pair de France*, which was afterward the basis of a popular prose romance. From the French, O. was borrowed by the English poets, Chaucer, Spenser, and others; but he is most familiarly known from his appearance in Shakespeare's *A Midsummer Night's Dream*. From old French sources, also, Wieland derived part of the materials of his poem *Oberon*.

OBESE, a. ō-bēs' [F. *obèse*—from L. *obesus*, fat, plump: It. *obeso*]: fat; fleshy. OBESE'NESS, n. -nēs, or OBESITY, n. ō-bēs'ī-tī, excessive fatness; unhealthy fatness.

OBESITY.

OBES'ITY, or COR'PULENCE: 'accumulation of fat under the integuments or in the abdomen, or in both situations, to such an amount as to embarrass the several voluntary functions.' Not only is a certain degree of fatness compatible with health, but (see FATS, ANIMAL) the fatty tissue is of considerable use in the animal body, partly for its physical, partly for its chemical properties; and only when the fatness begins to interfere with the discharge of any of the vital powers is it to be regarded as a morbid condition. O. may occur at any period of life, but is most frequent after the 40th year. After that time, often, in the case of men, much less muscular exercise is taken; while in women, the cessation of the function of child-bearing induces changes which tend remarkably to the deposition of fat. The extent to which fat may accumulate in the human body is enormous. Daniel Lambert, who died at the age of 40 years, weighed 733 lbs.; his exact height is not recorded, but, according to the investigations of Dr. Hutchinson (inventor of the spirometer), the normal weight of a man 6 ft. high should not exceed 178 lbs. Dr. Elliotson has recorded the case of a female child, a year old, who weighed 60 lbs.; and a large collection of cases of obesity is given in Wadd's *Cursory Remarks on Corpulence*.

The predisposing causes of O. are a peculiar habit of body, hereditarily transmitted, inactivity, sedentary occupations, etc.; while the more immediate or exciting causes are a rich diet, including fatty matters, and matters convertible in the body into fats, such as saccharine and starchy foods; and indulgence in such a diet to a greater extent than is requisite to balance the daily waste of the tissues. 'Fat meats, butter, oily vegetable substances, milk, saccharine and farinaceous substances, are the most fattening articles of food; while malt liquors, particularly rich and sweet ale, are, of all beverages, the most conducive in promoting obesity. The fattening effect of figs and grapes, and of the sugar-cane, upon the natives of the countries where these are abundant, is well known. In various countries in Africa and the East, where obesity is much admired in females, warm baths, indolence, and living upon saccharine and farinaceous articles, upon dates, the nuts from which palm-oil is obtained, and upon various oily seeds, are the means usually employed to produce this effect.'—Copland's *Dictionary of Medicine*, article 'Obesity.' The knowledge of the means of inducing O. affords the best clew to the rational treatment of it. It is a popular belief that the administration of acids—e.g., vinegar, or one of the mineral acids—will check the deposition of fat; but if this effect is produced, it is only at the cost of serious injury to the digestive, and often to the urinary, organs. Soap and alkalies, advocated a century ago by Dr. Flenmyng (*A Discourse on the Nature, Causes, and Cure of Corpulency*, 1760), are less objectionable than acids; but the prolonged use even of these is usually in-

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jurious. The efficacy of one of the common sea-weeds, sea-wrack (*Fucus vesiculosus*), has been strongly advocated. It is prescribed in the form of an extract, and its value is dependent probably on the iodine it contains.

Banting's *Letter on Corpulence*, pub. 1863, recording the effect of diet in his own case, after all medicinal treatment had failed, is worthy the attention of sufferers from O. The following are leading points in his case: He was 66 years of age, about 5 ft. 5 inches in stature (therefore, according to Dr. Hutchinson's calculations, ought to have weighed about 142 lbs.), and in 1862, Aug., weighed 202 lbs. He states that he had led an active life, so that his corpulence was not through neglect of bodily exercise; nor was it from excessive eating, drinking, or self-indulgence of any kind, except that his diet of the simple aliments was more free than was requisite at his age. 'I could not stoop to tie my shoe, nor attend to the little offices humanity requires, without considerable pain and difficulty; I have been compelled to go down stairs slowly backward, to save the jar of increased weight upon the ankle and knee joints, and then obliged to puff and blow with every slight exertion.'

By the advice of a medical friend, he adopted the following diet: 'For breakfast I take four or five ounces of beef, mutton, kidneys, broiled fish, bacon, or cold meat of any kind except pork; a large cup of tea (without milk or sugar), a little biscuit or one ounce of dry toast. For dinner, five or six ounces of any fish except salmon, any meat except pork, any vegetable except potato, one ounce of dry toast, fruit out of a pudding, any kind of poultry or game, and two or three glasses of good claret, sherry, or Madeira: champagne, port, and beer forbidden. For tea, two or three ounces of fruit, a rusk or two, and a cup of tea without milk or sugar. For supper, three or four ounces of meat or fish, similar to dinner, with a glass or two of claret. I breakfast between eight and nine o'clock, dine between one and two, take my slight tea-meal between five and six, and sup at nine.' Under this treatment, his weight in little more than a year (1862, Aug. 26—1863, Sep. 12) decreased 46 lbs., while his girth round the waist was reduced 12½ inches. He reported himself as restored to health, able to walk up and down stairs like other men, to stoop with ease, and to leave off knee-bandages, which he had *necessarily* worn for 20 years. His pamphlet passed through several editions, and the Banting system was found highly successful in numerous instances. Undoubtedly it is based on sound physiological principles. (Mr. Banting died 1878, at the age of about 82 years.)

OBEY, v. *ô-bâ'* [F. *obéir*, to obey—from L. *obedīrē*, to obey—from L. *ob*, toward, and *audīrē*, to hear (see OBEDIENT): to comply with the commands, orders, or instructions of a superior, as a parent, a master, or a teacher; to yield submission to. OBEY'ING, imp. OBEYED, pp. *ô-bād'*. OBEY'ER, n. *-ér*, one who obeys.

OBFUSCATE—OBITER DICTUM.

OBFUSCATE, v. *öb-füs'kāt* [L. *obfuscātus*, obscured—from *ob*, intensive; *fuscātus*, made dark]: to darken; to obscure; to bewilder or confuse. **OBFUS'CATING**, imp. **OBFUS'CATED**, pp. **OBFUSCATION**, n. *öb'füs-kā'shün*, the act of darkening or confusing; the state of being darkened.

OBI, *ö'bĩ*, or **OBEAH**, or **OBEA**, *ö-bē'a*, or **OBY**, *ö'bĩ* [etymology unknown]: a kind of secret initiation into magical arts, and the craft practiced thereby, by a class of persons among the negroes of the W. Indies; derived originally from Africa. The practicer is called an *Obeah-man* or *Obeah-woman*. **O.** is essentially the same with the corresponding superstitions all the world over. See **MAGIC: WITCHCRAFT.**

OBI RIVER: see **OB.**

OBIMBRICATE, a. *öb-ĩm'brĩ-kāt* [L. *ob*, reversed, and Eng. *imbricate*]: in *bot.*, having the imbrication directed downward.

OBIT, n. *ö'bĩt* [F. *obit*, anniversary mass in honor of the dead: L. *obitus*, death—from *ob*, near; *ĩrē*, to go (usually, to go or come down): It. *obito*]: decease: obsequies; in the *Rom. Cath. Chh.*, anniversary service for the repose of a departed soul. As a certain ecclesiastical service was fixed to be celebrated on the day of death (*in die obitus*), the word, meaning originally decease, came to be applied to the service itself. **Obit** therefore signifies, in old church language, the service performed for the departed. It consisted, in the Roman Church, of those portions of the *Officium Defunctorum* which are called *Matins* and *Lauds*, followed by a Mass for the Dead, chanted, or occasionally read. Similar services are held on the day of the funeral and thereafter, but especially on the 3d and 7th days after death, and on the 30th day (the service thence called the *Month's Mind*; also on the anniversary: and though the name *obit* was primitively applied only to the first, it is now used of them all indiscriminately. **OBITUAL**, a. *ö-bĩt'ũ-āl*, pert. to the days when obsequies are to be celebrated. **OBIT'-UARY**, a. *-ēr-ĩ*, relating to a death: N. a register of deaths; in the *Rom. Cath. Chh.*, a register of obitual days. **POST OBIT** [L. *post*, after]: after death; a deed to come into force after the death of the possessor of property on which money has been borrowed.

OBITER DICTUM, *öb'ĩ-tēr dĩk'tũm* [L. *obiter*, incidentally; *dictum*, said]: phrase used in general for anything said by the way. In legal use, it refers to an opinion incidentally expressed by a judge, but no proper part of the decision in hand and not implying mature consideration. It is held to be objectionable so far as it anticipates any actual contest, and it cannot be quoted as authority in a case, like decisions in due course.

OBJECT.

OBJECT, n. *ōb'jēkt* [L. *objectus*, cast or thrown in the way—from *ob*, in the way; *jactus*, thrown or cast: F. *objecter*, to oppose; *objet*, an object]: *literally*, a thing thrown before or presented, as to the mind or senses; anything set over against or before one; a thing seen; that with which the mind is occupied in the act of knowing; that on which the mind is fixed, as the end of an action or effort; anything presented to the mind; end; ultimate purpose: in *gram.*, the noun or pronoun which follows a transitive verb or a preposition: V. *ōb-jēkt'*, to oppose in words or arguments; to present or offer in opposition. OBJECT'ING, imp. OBJECT'ED, pp. OB'JECT-LESS, a. -lēś, without an aim or purpose. OBJECTOR, n. *ōb-jēkt'ér*, one who objects. OBJECTION, n. *ōb-jēk'shŭn* [F.—L.]: the act of presenting something in opposition; that which is presented in opposition; difficulty raised; fault found; doubt or scruple. OBJEC'TIONABLE, a. -ă-bl, liable or open to blame, or doubt, or suspicion. OBJEC'TIONABLY, ad. -ă-blĭ. OBJECTIVE, a. *ōb-jēk'tĭv*, relating to whatever is exterior to the mind; external; in *metaph.*, contrasted with and opposed to *subjective*—*subjective* denoting that which is to be referred to the thinker, and *objective* that which belongs to the thing thought of (see OBJECT, in *Metaphysics*): in *gram.*, the case which follows a transitive verb or a preposition; the accusative. OBJEC'TIVELY, ad. -lĭ. OBJEC'TIVENESS, n. -nēs, the state of being an object. OBJECTIVITY, n. *ōb'-jēk-tĭv'ĭ-tĭ*, the state of being objective; objective character. OBJECT-GLASS, the glass placed at the end of a microscope or telescope, and toward the object, whose office is to form an image of the object (see below).—SYN. of 'object, n.': aim; motive; subject; purpose; cause; appearance;—of 'objection': exception; scruple; doubt; difficulty.

OB'JECT, in *Metaphysics*: that of which any thinking being or *Subject* can become cognizant. This subject itself, however, is capable of transmutation into an Object, for one may think about his thinking faculty. To constitute a metaphysical O., actual existence is not necessary; it is enough that it is conceived by the subject. Nevertheless, it is customary to employ the term objective as synonymous with real, so that a thing is said to be 'objectively' considered when regarded in itself, and according to its nature and properties; and to be 'subjectively' considered when it is presented in its relation to us, or as it shapes itself in our apprehension. Skepticism (philosophical) denies the possibility of objective knowledge—i.e., it denies that we can ever become certain that our cognition of an object corresponds with the actual nature of that object. See SKEPTICISM.—The verbal antithesis of objective and subjective representation is largely employed also in the fine arts; but even here, though the terms may be convenient, the difference expressed by them is one only of degree, not of kind. When a poem or a novel, for example, obtrudes the peculiar genius of the author, at the expense of a

OBJECT-GLASS—OBLATION.

clear and distinct representation of the incident and character which are appropriately involved, it is called a subjective work; when, on the contrary, the personality of the author retires into the background, or disappears altogether, the work is called objective. The poems of Shelley and Byron, the novels of Jean Paul Richter, Bulwer-Lytton, and Victor Hugo, and the paintings of the Pre-Raphaelites belong essentially to the subjective class; the dramas of Shakespeare, the novels of Scott, and the poems of Goethe, to the objective.

OBJECT-GLASS: see TELESCOPE: MICROSCOPE.

OBJURGATE, v. *ōb-jēr'gāt* [L. *objurgatus*, chidden, rebuked—from *ob*, against; *jurgārē*, to sue, to quarrel]: to chide; to reprove. OBJUR'GATING, imp. OBJUR'GATED, pp. OBJURGA'TION, n. *-gā'shūn* [F.—L.]: reproof; reprehension. OBJURGATORY, a. *ōb-jēr'gā-tēr-ī*, containing censure or reproof.

OBLATE, a. *ōb-lāt'* [L. *oblātus*, borne against, brought forward—from *ob*, against; *latus*, borne or brought]: flattened or depressed at the poles, as a spheroid; shaped like an orange. OBLATE SPHEROID, a spheroid depressed or flattened at the poles.

OBLATE, a. *ōb-lāt'* [L. *oblātus*, offered (see OBLATE 1)]: offered up; dedicated: in the *Rom. Cath. Chh.*, used of secular persons who, embracing a monastic life, have given all their goods to the monastery of which they have become members. *Oblates* designates a class of religious bodies which differ from the religious orders, strictly so called, in not being bound by the solemn vows of the religious profession. The institute of oblates was one of the many reforms introduced into the diocese of Milan by St. Charles Borromeo, toward the close of the 16th c. The members consisted of secular priests who lived in community and were bound merely by a promise to the bishop to devote themselves to any service which he should consider desirable for the interest of religion. St. Charles made use of their services chiefly in the wild and inaccessible Alpine districts of his diocese. This institute still exists, and has been recently introduced into England. Still more modern are the 'Oblates of the Blessed Virgin Mary,' a body of French origin which arose in the 19th c. and has been widely extended, and whose chief object is to assist the parochial clergy, by holding missions for the religious instruction of the people in any district to which they may be invited. This body also has been established in England and in Ireland. The constitution of all similar institutes is nearly the same. There is also a female institute of oblates, established in Rome, about 1440, by St. Francisca of Rome, and which consists of women associated for charitable and religious objects, and living in community, but bound only by promise, not by vow. OBLATION, n. *ōb-lā'shūn* [F.—L.]: anything presented in worship or religious service; an offering; a sacrifice.

OBLATION: see under OBLATE 2.

OBLIGE—OBLIGATION.

OBLIGE, v. *ō-blīj'* [F. *obliger*, to oblige—from L. *oblīgārē*, to bind or fasten round, to oblige; *oblīgātus*, bound round—from *ob*, to; *līgārē*, to bind: It. *obligare*]: to bind or constrain, as by a sense of propriety or duty, or by necessity, physical or legal; to lay under an obligation; to do a favor to; to please; to gratify. OBLIGING, imp.: ADJ. having the disposition to oblige; conferring favors; civil; courteous; kind. OBLIGED, pp. *ō-blījd'*. OBLIG'ER, n. *-ér*, one who obliges. OBLIGINGLY, ad. *-lī*. OBLIGATION, n. *ōb'li-gā'shūn* [F.—L.]: the binding power of a vow, promise, or oath; any act which binds one to do, or forbear to do, something to another, or for him; favor by which one is bound in gratitude; legal contract: in *Scotch law*, the binding effect of any legal contract: an obligation is said to be pure when it may be instantly demanded (called in other legal systems an absolute contract; an obligation is conditional when it depends for its legal effect on some event which may or may not happen. Obligations are divided also into verbal and written.—See OBLIGATION OF CONTRACTS. OBLIGATORY, a. *ōb'li-gā-tēr-ī*, imposing duty; binding in law or conscience; coercive. OBLIGATO, a. *ōb'li-gā-tō* [It. *obligato*, obliged]: in *music*, applied to a movement for some particular instrument restrained by certain rules; giving emphasis or expression to a passage. When a musical composition is constructed in more than one part, any part is said to be obligato which is employed not merely to strengthen the others, but is necessary to the melodic perfection of the whole. An accompaniment is said to be obligato which does not consist of mere chords, but has its own melody. OBLIGEMENT, n. *ō-blīj'měnt*, an act of kindness or courtesy; a benefit or favor conferred. OBLIGEE, n. *ōb'li-jē* [F. *obligé*, bound]: the person to whom another is bound. OBLIGOR, n. *ōb'li-gōr'*, the person who binds himself or gives his bond to another.—SYN. of 'obliging, a.': civil; polite; accommodating; courteous; complaisant; considerate; kind.

OBLIGATION OF CONTRACTS: binding force of the law which holds the parties to a contract to perform their agreement, and which gives a remedy to enforce its performance, or to make compensation for its non-performance; so that the contract is fulfilled by complying with whatever the existing law requires in relation to it. By the United States constitution, Art. I., sec. 10, states are prohibited from passing any laws impairing the obligation of contracts. Under this clause, the questions that have arisen for judicial decision have been: 1, What is a contract within the meaning of this section, and to what contracts does it apply? and 2, What laws interfere with this prohibition? It has been decided that this section embraces all contracts which affect property or some object of value and confer rights which might be asserted in a court of justice, whether the contracts be expressed or implied, executed or executory. Conveyances, statutory grants, and charters to private cor-

OBLIGATION.

porations are included in the meaning of contract as used in that section. In the famous Dartmouth College case, the U. S. supreme court decided that this section referred to contracts of every description, and that the prohibition was applicable to contracts between the state and an individual, as well as to contracts between individuals. To avoid the effect of this decision, most of the state constitutions contain a clause that all charters of private corporations shall be subject to repeal or modification, and frequently a clause to that effect is inserted in the charter. This prohibition does not, however, apply to the charters and political powers given to municipal corporations, for the reason that such charters are not regarded as contracts, the very essence of a contract—viz., two parties with mutual obligations—being lacking: to such an instrument there is only one party, the public. This same case decides that the charters granted by the crown before the revolution come within this section: this case is now regarded as unquestioned authority. Whether a legislature can exempt property from taxation so as to bind all future legislation has not yet been judicially settled. The U. S. supreme court has intimated that, for a consideration sufficiently valuable, a state might partially release its taxing power; but several state courts have vehemently held that the taxing power is a sovereign right of the state, which a legislature has no right to surrender without express authority from the constitution of the state to do so. The effect of this clause on marriage contracts has not yet been ascertained by final adjudication. Though from the decisions it seems that a marriage is not a contract which comes within the scope of this clause, yet the authorities seem to agree that any law creating new grounds or new facilities for the divorce of parties married before the law was passed would impair the obligation of the marriage contract and would be unconstitutional; but this has not yet been positively decided. Alteration in the remedies for the violation of contract obligations, or changing the time and mode in which these remedies may be effected, or barring relief after a certain lapse of time, does not impair the obligation. Though congress has been given the power to pass bankrupt laws, it seems settled that this power is not exclusive, and the states may make insolvent laws without violating this clause of the constitution. The distinction has been made in the U. S. courts between laws impairing the remedy and laws impairing the obligation: the first—e.g., laws abolishing imprisonment for debt—being valid; while the others—e.g., stay laws, exemption laws, statutes of limitations—are invalid except when they affect subsequent contracts. The power of the state to enact police regulations for preservation of public health and morals is generally conceded; and it has been held that licenses to do certain acts, even when granted for a consideration—e.g., for the sale of lottery tickets—might be repealed without conflicting with this prohibition:

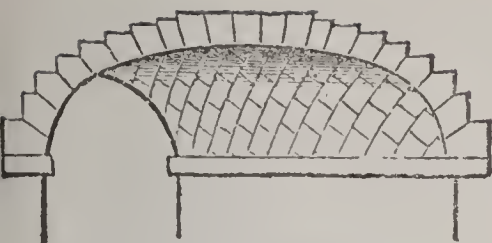
OBLIQUE—OBLONG.

OBLIQUE, a. *ōb-lēk'* [F. *oblique*—from L. *obliquus*, sidewise, slanting: It. *obliquo*]: deviating from a right line; not parallel; aslant; not direct; by a side glance; an angle not of 90 degrees; sinister; applied to any case of a noun not the nominative; in *bot.*, unequal-sided. **OBLIQUE'LY**, ad. *-lī*. **OBLIQUE'NESS**, n. *-nēs*, or **OBLIQUITY**, n. *ōb-līk'wī-tī*, deviation from a right line; deviation from rectitude of conduct; irregularity. **OBLIQUE ANGLE**, any angle except a right angle or one of 90 degrees. **OBLIQUE-ANGLED**, having only oblique angles, or those not of 90 degrees. **OBLIQUE ARCH**, an arch whose direction is not at right angles to its axis. **OBLIQUE CASE**, in *gram.*, any case of a noun except the nominative. **OBLIQUE FIRE**, a fire the direction of which is not perpendicular to the line fired at. **OBLIQUE LINE**, a straight line which makes unequal angles with another. **OBLIQUE MOTION**, in *music*, one of the parts holding on a sound while another rises or falls. **OBLIQUE SAILING**, a ship not sailing in one direction to reach its destination, but first to the one point, then to the other—that is, upon some rhumb between the four cardinal points. **OBLIQUE SPEECH**, that speech or language which is quoted in a different person from that employed by the original speaker. **OBLIQUE SPHERE**, the sphere in that position in which the circles apparently described by the heavenly bodies in their diurnal rotation are oblique to the horizon. **OBLIQUITY OF THE ECLIPTIC**, the angle of the inclination of the equator and ecliptic.

OBLITERATE, v. *ōb-līt'ēr-āt* [L. *obliterātus*, blotted out or erased—from *ob*, against; *litus*, a smearing: It. *oblitterare*: F. *oblitérer*]: to efface, as anything written, printed, or engraved; to blot out; to erase; to destroy by time or other means, as from the memory. **OBLIT'ERATING**, imp. **OBLIT'ERATED**, pp.: **ADJ.** effaced; worn out. **OBLITERATION**, n. *ōb-līt'ēr-ā'shūn*, the act of effacing; a blotting out or wearing out. *Note.*—L. *obliterātus* is said to be derived in the first instance from *ob*, and *litērā*, a letter, whose original sense is, 'a smear, a mark,' a connection being thus established with *litus*—see Skeat. —**SYN.** of 'obliterate': to efface; cancel; deface; destroy; expunge; blot out; wear out.

OBLIVION, n. *ōb-līv'ī-ōn* [F. *oblivion*—from L. *oblivīō-nem*, a forgetting or slipping out of the memory: It. *oblivione*]: state of being blotted out from the memory; cessation of remembrance; forgetfulness; remission of punishment. **OBLIVIOUS**, a. *ōb-līv'ī-ūs* [L. *obliv'iosus*, forgetful]: forgetful; causing forgetfulness. **OBLIV'IOUSLY**, ad. *-lī*. **OBLIV'IOUSNESS**, n. *-nēs*, state of being oblivious or forgetful.

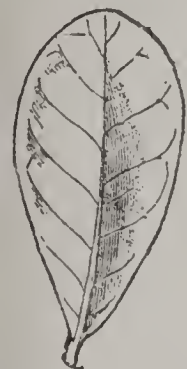
OBLONG, a. *ōb'lōng* [F. *oblong*—from L. *oblongus*, oblong—*from ob*, against; *longus*, long: It. *oblungo*]: longer than broad; drawn out in length: **N.** a figure longer than broad. **OBLONG-OVATE**, a. being between oblong and ovate.



Oblique Arch.



Brass Obolus of Metapontum: A. actual diameter of coin.



Obovate Leaf.



Obvolute.



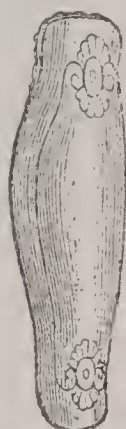
Obverse-lunate Leaf.



2, Ochrea of *Polygonum Hydropiper*.



Octandria.—Flower of Rue.



Ochrea.



Octandria.—1, *Acer* (Monogynia); 2, *Chrysosplenium* (Digynia); 3, *Polygonium* (Trigynia); 4, *Elatine* (Tetragynia).



Octopus.

OBLOQUY—OBOOKIAH.

OBLOQUY, n. *ōb' lō-kwī* [L. *oblōquī*, to speak against—from *ob*, against; *loquor*, I speak]: language which causes reproach and odium to rest on the character or actions of any one; slander.—**SYN.**: contumely; reproach; odium; censure; gainsaying; reviling; calumny; detraction; disgrace.

OBMUTESCENCE, n. *ōb' mū-tēs' ēns* [L. *obmutescens*, becoming or growing dumb; *mutus*, dumb]: observation of silence; loss of speech.

OBNOXIOUS, a. *ōb-nōk' shūs* [L. *obnoxius*, exposed or liable to hurt—from *ob*, against; *noxius*, hurtful: Sp. *obnoxio*, obnoxious]: offensive; hateful; odious; liable or exposed; censurable. **OBNOX'IOUSLY**, ad. *-lī*. **OBNOX'IOUSNESS**, n. *-nēs*, state of being obnoxious; ediousness.

OBOE, n. *ō'boy* [It.]: a musical wind-instrument sounded through a reed; a stop in an organ—the same as **HAUTBOY**, which see.

OBOLUS, n. *ōb' ō-lūs* [L. *obolus*; Gr. *obōlos*, an obolus or spit]: smallest of the four common Greek coins and weights: originally, as is generally supposed, a small piece of iron or copper, similar in form to the head of a spit, or spear-head, whence its name. In this form it was used as a coin, and a handful of 'oboli' was equivalent to a Drachma (see **DRACHM**). It was subsequently coined of silver, and in the ordinary round form, but still retained its original name; its value, both as a coin and a weight, was then fixed as the $\frac{1}{6}$ part of a drachma, so that in the Attic system it was equivalent to $1\frac{5}{8}d.$, or about $3\frac{1}{4}$ cents, and $15\frac{2}{3}$ troy grains, respectively; while the Ægine-tan obolus was worth $2\frac{3}{4}d.$, or a little more than $5\frac{1}{2}$ cents, as a coin, and $25\frac{2}{3}$ troy grains as a weight. Multiples and submultiples of this coin also were used; and pieces of the value of 5, 4, 3, 2, $1\frac{1}{2}$ oboli, and of $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ of an obolus, respectively, are found in collections of coins. **OBOlus**, in *geol.*, a genus of bivalves characterized by their smooth, spherical shells, with their valves scarcely equal. **OB'OLO**, n. *-lō*, in the *Ionian Islands*, a copper coin in value about a half-penny. **OBOlite GRIT**, *ōb' ō-līt* [Gr. *lithos*, a stone]: in *geol.*, the Lower Silurian sandstones of Sweden and Russia—so called from the abundance of the shells of the obolus found in it: see **OBELISK**.

OBOOKI'AH, HENRY: Hawaiian Christian student: b. Hawaii, near 1795. Made prisoner in a native war, wherein his parents and brother were slain, he was rescued by his uncle, a high priest, and in 1805 took passage in a ship for New Haven, Conn., where he was attracted by the Yale College buildings; found weeping at the door of one of these, he was taken home and instructed by the Rev. E. W. Dwight. Samuel J. Mills learned of Obookiah's desire to be educated in the Christian religion, and to teach his countrymen; and he took him to the Mills home in Torrington, Conn., where he made good progress in study. Afterward he passed

OBOVATE—O'BRIEN.

two years at Andover Theological Seminary and some time in the Litchfield public school, and, under the care of the American Board, at a foreign-mission school in Cornwall, Conn. He died there 1818, Feb. 17; but his life led to the education of several Sandwich Islanders, and the founding of missions in the islands.

OBOVATE, a. *ōb-ō'vāt* [L. *ob*, reversed; *ovātus*, egg-shaped]: in *bot.*, ovate, but having the narrow end downward.

O'BRIEN, *o-brī'én*, FITZ-JAMES: 1828–1862, Apr. 6; b. Limerick, Ireland. He studied at the University of Dublin, after which he spent two years in London, where he was connected with a journal and dissipated a fortune which he had inherited. He came to the United States about 1852, adopted the profession of journalism, and contributed sketches, poems, and stories to several leading literary publications in New York. In 1853 he became connected with *Harper's Magazine*, to which he furnished a large number of articles. He also wrote for *Putnam's Magazine* and the *Atlantic Monthly*, and furnished several plays, one of which, *A Gentleman from Ireland*, had an enduring popularity. He was a member of the 7th regt., N. Y. vols., 1861, and became a staff-officer under Gen. Lander. In a skirmish 1862, Feb. 16, he received a wound which necessitated a surgical operation and was succeeded by lockjaw, from which he died. *The Poems and Stories of Fitz-James O'Brien*, with personal recollections by some of his associates, were collected by William Winter 1881. Among his most popular stories are *The Diamond Lens* and *The Golden Ingot*. He died in Virginia.

O'BRI'EN, JEREMIAH: 1740–1818, Oct. 5; b. Scarborough, Me.: commander of the American force in the first sea-battle of the revolution. He had removed to Machias and engaged in the lumber business. The *Margaretta*, an armed British schooner, entered the harbor 1775, May, and the officers threatened to destroy the town if a liberty pole which the inhabitants had recently erected was not removed. The people resolved to seize the officers; but they sailed down the river, followed by a sloop manned by 60 volunteers, of whom O'B. was chosen captain. The patriots had but little ammunition, and some were armed only with pitchforks; but, after a sharp conflict, the *Margaretta* was taken. The provincial govt. soon commissioned O'B. captain. He captured several prizes, was taken prisoner and sent to England, escaped, and returned to Maine. After living several years at Brunswick, he was made collector of the port at Machias, which office he held till his death.

O'BRIEN—OBSCENE.

O'BRIEN, LUCIUS RICHARD: Canadian artist: b. 1832, Aug. 15, at Shanty Bay, Lake Simcoe. He studied architecture, practiced as civil engineer, and was the first pres. of the Royal Canadian Acad. of Arts. His pictures, landscape and marine, are recently in water-color only: among the principal are two pictures of Quebec (1881), painted for the queen; *Cape Diamond*, for the Marquis of Lorne, wedding-present for Prince Leopold, 1882; *September on the Saguenay*, owned by the Marquis of Lansdowne; *Footprints of an Avalanche*, at the Royal Acad., London, 1887, May.

O'BRIEN, WILLIAM SMITH: 1803, Oct. 17—1864, June 18; second son of Sir Edward O'Brien, Bart. of Dromoland, County Clare, Ireland. He was educated at Harrow School, whence he passed to Trinity College, Cambridge. He entered parliament for the borough of Ennis 1826, and was a warm supporter of Rom. Cath. emancipation. In 1835 he was returned on advanced liberal principles for the county of Limerick; and for several years strongly advocated the claims of Ireland to a strictly equal share with England in legislative as well as executive measures. Professing his inability to effect this in the united legislature, and having embroiled himself with the speaker by refusing to serve on committees (for which refusal he was committed to prison in the house by the speaker's order), he withdrew from attendance in parliament 1841, and joined actively with Daniel O'Connell (q.v.) in agitation for a repeal of the legislative union between England and Ireland. In the progress of that agitation, a division having arisen on the question of *moral* as against *physical* force between O'Connell and the party known as 'Young Ireland,' O'B. sided with the latter and became recognized as its head; and when the political crisis of 1848 eventuated in a recourse to arms, he took part in an attempt at rebellion in s. Ireland, which in a few days came to an almost ludicrous conclusion. He was in consequence arrested, and, having been convicted, was sentenced to death. The sentence, however, was commuted to transportation for life; and after the restoration of tranquillity in the public mind in Ireland, he, with the other political exiles, was permitted to return to his native country. From that date (1856), he spent much of his time in foreign travel; and though he wrote more than once in strong disapproval of the existing state of things, he abstained from all active share in the political proceedings of any party.

OBRYZUM, n. [LL. in full, *Obryzum aurum*, pure gold]: fine, pure, or tested gold.

OBSCENE, a. *ōb-sēn'* [F. *obscène*—from L. *obscœnus*, detestable, unnatural]: impure in language or action; indecent; filthy; in *OE.*, inauspicious. **OBSCENE'LY, ad.** -*lī*. **OBSCENE'NESS, n.** -*nēs*, or **OBSCENITY, n.** *ōb-sēn'ī-tī*, impurity in language or action; lewdness.—**SYN.** of 'obscene': immodest; impure; unchaste; lewd; foul; offensive; disgusting.

OBSCENE PRINTS.

OBSCENE PRINTS or BOOKS or PICTURES: objects of prohibitive legislation as to their sale or exhibition. In Britain, the legal provisions are severe in relation to them.—By the U. S. revised statutes, all persons are prohibited from importing into the United States, from any foreign country, any obscene book, pamphlet, paper, writing, advertisement, circular, print, picture, drawing, or other representation, figure, or image, on or of paper or other material. No invoice or package whatever, or any part of one, in which any such articles are contained, may be admitted to entry; and all invoices and packages whereof any such articles shall compose a part are liable to be proceeded against, seized, and forfeited by due course of law. All such prohibited articles in the course of importation must be detained by the officer of customs; and any judge of any district or circuit court of the United States, within the proper district—before whom complaint in writing of any such violation is made, to the satisfaction of such judge, and founded on knowledge or belief, and, if upon belief, setting forth the grounds of such belief, and supported by oath or affirmation of the complainant—may issue, conformably to the constitution, a warrant directed to the marshal, or any deputy-marshal, in the proper district, directing him to search for, seize, and take possession of any such article or thing, and to make due and immediate return thereof, to the end that the same may be condemned and destroyed by proceedings, which shall be conducted in the same manner as other proceedings in case of municipal seizure, and with the same right of appeal or writ of error; and any officer, agent, or employé of the govt. of the United States who shall knowingly aid or abet any person engaged in any violation of any of the provisions of law prohibiting the importing, advertising, dealing in, exhibiting, or sending or receiving by mail, obscene or indecent publications or representations, is guilty of a misdemeanor, and for every offense is punishable by a fine of not less than \$100 and not more than \$5,000, or by imprisonment at hard labor for not less than one year nor more than ten, or both. No obscene, lewd, or lascivious book, pamphlet, picture, paper, print, or other publication of an indecent character, nor any letter upon the envelope of which, or postal card upon which, indecent or scurrilous epithets may be written or printed, may be carried in the mail; and any person who shall knowingly deposit, or cause to be deposited, for mailing or delivery, any such articles or things, is guilty of a misdemeanor, and shall for every offense be fined not less than \$100 nor more than \$5,000, or imprisoned at hard labor not less than one year nor more than ten years, or both. Every person who, within the District of Columbia or any of the Territories of the United States, or other place within exclusive U. S. jurisdiction, sells, or lends, or gives away, or in any manner exhibits, or offers to sell, or to lend, or to give away, or in any manner to exhibit, or otherwise

OBSCURANT—OBSCURE.

publishes or offers to publish in any manner, or has in his possession, for any such purpose, any obscene book, pamphlet, print, or picture, shall be imprisoned at hard labor in the penitentiary not less than six months nor more than five years for each offense, or fined not less than \$100 nor more than \$2,000, with costs of court.—See VICE, THE NEW YORK SOCIETY FOR THE SUPPRESSION OF.

OBSCURANT, n. *ōb-skū'rānt* [L. *obscurāntem*, rendering dark or obscure—from *obscurus*, dark]: one who, in writing or in teaching, opposes the progress, or at least the general diffusion, of knowledge among the great mass of the people. OB'SCURANT'ISM n. *-izm*, the principles of an obscurant. OBSCURANT'IST n. *-ist*, one who sets himself to oppose the progress of modern science; an obscurant. Those who avow such a doctrine, and have written to explain and defend it, profess earnestly to desire the progress of all true knowledge, as a thing good in itself; but they look with apprehension on its indiscriminate diffusion among men, as tending to only half-knowledge, to presumption, to fanaticism, to discontent, and as prejudicial to the religious welfare of men in general, and as possibly injurious to their material interests. They profess only to reduce to practice the motto, 'A little learning is a dangerous thing.' It cannot be doubted, however, that there are fanatics of ignorance as well as fanatics of science; and that the only ultimate remedy for the ills that pertain to darkness must be not darkness deeper or prolonged, but light. Still the obscurantists may do an incidental service by pointing out the perils of a merely intellectual advancement, with no corresponding moral development. The trust in a merely mental training and equipment is fallacious, as regards any genuine enlightenment or progress; and he is the worst of all obscurantists who is indifferent to a darkness which obscures man's moral discernments.

OBSCURE, a. *ōb-skūr'* [F. *obscur*—from L. *obscurus*, dark, with little light]: dark; with little light; not much known; lying remote from observation; of humble condition; not easily read or understood; not clear: V. to darken; to hide from view; to make less visible or intelligible; to conceal or disguise; to tarnish; to eclipse. OBSCUR'ING, imp. OBSCURED', pp. *-skūrd'*: ADJ. made dark; hidden. OBSCURE'LY, ad. *-lī*, in an obscure manner; darkly; not clearly. OBSCURATION, n. *ōb'skū-rā'shūn*, the act of obscuring or darkening; the state of being obscured. OBSCURITY, n. *ōb-skū'rī-tī* [F. *obscurité*—from L. *obscuritatem*, darkness]: darkness; state of being unknown to fame or unnoticed; darkness of meaning.—SYN. of 'obscure, a.': indistinct; dim; darksome; intricate; abstruse; mysterious; difficult; unknown; unnoticed; retired; mean; humble; imperfect; defective; shaded; darkened; hidden; not clear; not legible; blind; gloomy.

OBSECRATION—OBSERVANTISTS.

OBSECRATION, n. *ōb'sē-krā'shūn* [F. *obsécration*—from L. *obsecrātiōnem*, a beseeching, imploring—from *ob*, *sacer* or *sacra*, sacred]: supplication; entreaty; that part of a speech in which the assistance of God or man is implored.

OBSEQUIES, n. plu. *ōb'sē-kwīz* [F. *obsèques*, obsequies—from mid. L. *obsequiæ*, funeral rites—from L. *obsē-quiūm*, a following or attendance on some great person—from *ob*, near; *sequi*, to follow]: funeral rites and solemnities: see **FUNERAL RITES**: ETC.

OBSEQUIOUS, a. *ōb-sē kwī-ūs* [F. *obséquieux*—from L. *obsēquiūm*, the following some great person, complaisance; *obsēquiōsus*, very complying, obsequious—from *ob*, in the way; *sequor*, I follow]: promptly obedient or compliant to the will of another; compliant to excess; meanly or servilely condescending; in *OE.*, belonging to obsequies; funereal; mourning. **OBSE'QUIOUSLY**, ad. *-lī*, in an obsequious manner; obediently; in *OE.*, with reverence for the dead. **OBSE'QUIOUSNESS**, n. *-nēs*, prompt obedience; servile submission.—**SYN.** of 'obsequious': servile; compliant; obedient; yielding; attentive.

OBSEQUY, n. *ōb'sē-kwī*: singular of **OBSEQUIES**, which see; in *OE.*, funereal ceremony; obsequiousness.

OBSERV'ANTISTS, or **OBSERV'ANT FRANCIS'CANS**: the more rigorous of the classes into which the order of Franciscans became separated in the 15th c. For the earlier history of the controversies in that order, on the interpretation of the original rule and practice established by St. Francis for the brethren, and of the separate organization of the two parties at the time of Leo X., see **FRANCISCANS**. The advocates of the primitive rigor were called *Observantes*, or *Observantines*, or *Strictioris Observantiæ*; but both bodies were still reputed subject (though each free to practice its own rule in its own separate houses, to the general administrator of the order, who, as the rigorists were by far the more numerous, was a member of that school. By degrees, a second reform arose among a party in the order, whose zeal the rigor of the O. was insufficient to satisfy; and Clement VII. permitted two Spanish friars, Stephen Molena and Martin Guzman, to carry out in Spain these views in a distinct branch of the order, who take the name of *Reformati*, or Reformed. This body was in later times incorporated with the O. under one head. Before the French Revolution, they are said to have numbered above 70,000, distributed over more than 3,000 convents. Since that time, their number has been much diminished; but they still are very numerous and widespread in Europe, the new world, and the missionary districts of the East. In Ireland and England, and for a considerable time in Scotland, they maintained themselves throughout the times of rigor, and several communities remain in England and Ireland.

OBSERVATION AND EXPERIMENT.

OBSERVA'TION-CAR: railway-car, with sides open or fitted with glass, to allow of observation of scenery, or inspection of the road.

OBSERVA'TION AND EXPER'IMENT: the leading features of modern science, as contrasted with the philosophy of the ancients. They are indispensable as the bases of all human knowledge; and no true philosophy has ever made progress without them, either consciously or unconsciously exercised. Thus, by Socrates, Plato, and Aristotle, no less than by Archimedes and the ancient astronomers, observation and experiment are extensively, though not prominently or always obviously, employed; and it was by losing this clue to the spirit of their masters' teaching that the later disciples in these schools of philosophy missed the path of real progress in the advancement of knowledge. It was in the latter half of the 16th c. that the minds of philosophers were first *consciously* awakened to the importance of observation and experiment, as opposed to dogmatic authority and abstract reasoning. This result was occasioned first by the discoveries and controversies of Galileo in Florence; and to the same end were contributed the simultaneous efforts of a number of philosophers—Tycho Brahé in Holland, Kepler in Germany, William Gilbert in England—who were soon followed by a crowd of kindred spirits. The powerful mind of Francis Bacon (q.v.) lent itself to describe the newly awakened spirit of scientific investigation; and though he ignored or affected to despise the results achieved by the great philosophers just mentioned, he learned from them enough to lay the foundation of a philosophy of inductive science, which, if we look at the course of scientific progress since his day, seems to have been almost prophetic: see **NOVUM ORGANON**. The difference between observation and experiment may be said to consist in this, that by observation we note and record the phenomena of nature as they are presented to us in her ordinary course; whereas by experiment we note phenomena presented under circumstances artificially arranged for the purpose. Experiment is thus the more powerful engine for discovery, since one judiciously conducted experiment may provide the data which could result from only a long series of observations.

OBSERVATORY.

OBSERVATORY: institution supplied with instruments for the regular observation of natural phenomena—astronomical, meteorological, or magnetical. In some observatories, all three classes of observation are carried on; but in most observatories special attention is given to astronomy alone, and only such meteorological observations are taken as are required for calculation of the effect of atmospheric refraction on the position of a heavenly body; there are, however, a few observatories engaged solely in meteorological or magnetical observations: the astronomical observatories are the theme of this article. They are conveniently divided into two classes—public and private observatories—the former concerned with those observations which, from their nature, require to be continued on the same system for long periods of time; while the latter are founded usually for some special object, which may be attained with comparatively small expenditure of time and labor.

The most important work in public observatories is the determination of the movements of the sun, moon, and planets among the stars; and, as a corollary to this, the relative positions of the stars to which the other heavenly bodies are referred. In early times, the Greek astronomers fixed these positions by means of armillary spheres and astrolabes, having concentric graduated circles, on which the latitudes and longitudes could be read, when a pair of sights was pointed to the heavenly body. Ptolemy made use of a quadrant, with which he measured zenith distances on the meridian; and, many centuries later, Tycho Brahé converted this form of instrument into an altazimuth, by mounting it on a vertical axis in connection with a horizontal or azimuth circle. With this instrument, Tycho Brahé, at the observatory which the king of Denmark erected for him, made a long series of observations of the altitudes and azimuths of the heavenly bodies, measuring with great assiduity their angular distances from each other, by means of a sextant—a method of observation which Flamsteed afterward employed with a much-improved form of the instrument, and which is now extensively used with the reflecting sextant, for finding longitude at sea. It was not till the middle of the 18th c. that the improvement of the clock by Graham enabled astronomers to rely on it for determination of right ascensions by the times of passage across the meridian, instead of by measuring them with a graduated circle. The quadrant was then fixed in the meridian, and, being attached to a massive wall, its dimensions were increased, and greater accuracy thereby secured in determination of meridian zenith distances. Two such instruments, pointing respectively n. and s., were erected at the Royal Observatory, Greenwich, England, and used by Bradley and his successors from 1750 till they were displaced by the mural circle (see **CIRCLE, MURAL**—an instrument vastly superior in principle, since the troublesome errors of centring of the quadrant were eliminated by combining the readings of

opposite parts of a graduated circle; while the effect of division errors was much reduced by taking the mean of the readings at six or eight equidistant points of the circle. At the same time, the accuracy of the readings was greatly increased by the invention of the micrometer-microscope, which made it possible to measure spaces to $\frac{1}{100000}$ of an inch. Neither the quadrant nor the mural circle, however, could be relied on for accurate motion in the plane of the meridian; but Römer remedied this defect by inventing a separate instrument, the Transit (q.v.), which enabled astronomers to observe the times of meridian passage or transit with great accuracy, and thus to determine the differences of right ascension of the heavenly bodies by means of the apparent diurnal movement. With the transit and quadrant, Bradley commenced that series of observations of the positions of the sun, moon, and planets, and of stars, for reference, which has been continued ever since at Greenwich, and on which, in combination with less extensive series at Paris and Königsberg, all our tables of the motions of the heavenly bodies are founded. In modern observatories, the transit and mural circle are combined into one instrument, the transit-circle—a change which has been rendered possible chiefly by the improvement in graduated circles since the invention of Troughton's dividing-engine—the unwieldy size of the old quadrants and mural circles necessitating an attachment to a massive wall. Although Reichenbach made transit-circles at the beginning of the 19th c. for several foreign observatories, including that of Dorpat, the lightness of their structure and their lack of stability prevented their general introduction, and the mural circle held its place in the principal observatories till Sir George Airy designed the Greenwich transit-circle 1851—an instrument of most massive construction, which has served as model for nearly all in recent years. The main features of the modern transit-circle are: (1) that it is not reversible, its collimation error being determined by means of two collimators or reversed telescopes, pointing at each other and at the transit-telescope, n. and s. respectively; (2) that a spirit-level is not used, the level error being found by means of the reflection of the wires from the horizontal surface of mercury. These two negative characteristics, while admitting great massiveness in construction (the Greenwich instrument weighs more than a ton), have removed three troublesome sources of error—inequality in the pivots, lateral flexure of the telescope in the process of reversion, and the effect of currents of heated air on a spirit-level. An important auxiliary to the transit-circle is the chronograph, an American invention, which in various forms is now found in all well-equipped observatories, the principle in all cases being the same—viz., the registration, on a revolving cylinder of paper, of the times of transit across the system of spider-lines of the transit-circle, as well as of the seconds of the sidereal clock, by

OBSERVATORY.

means of electric currents, which pass through electromagnets, when the circuit is closed either by the observer or by the clock, thus causing an instantaneous attraction of a piece of soft iron, and producing a corresponding mark on the paper with either a pen or a steel point. This system, while improving somewhat the accuracy of the individual observations, admits of a large series of observations at intervals of two or three seconds, and leaves the observer free to make several observations of zenith distance during the passage of a star across the field of view. In the construction of the sidereal clock, important in modern astronomy, considerable improvements have been made since Graham's time, the original gridiron pendulum having been replaced successively by the mercurial and the zinc and steel, and the dead-beat escapement by Denison's gravity and Airy's detached escapement. Recently an apparatus depending on the attraction of a movable magnet connected with a float in a siphon barometer has been applied by Sir George Airy to the sidereal clock at Greenwich, to correct for the effect of variations in the atmospheric pressure on the motion of the pendulum. This clock is placed in a basement kept at nearly uniform temperature—an important condition, which has contributed to make its performance very far superior to that of any other clock, and equal to all requirements of the methods of observation now in use. With instruments such as those above noted, regular observations of the sun, moon, and planets, and of fundamental stars, are made at Greenwich, Paris, Washington, and Oxford, supplemented at Greenwich Observatory by extra-meridian observations of the moon with a massive altazimuth, which can be employed when the moon is too nearly new moon to be seen on the meridian in full daylight, and which is in fact used to secure an observation on every night when the moon is visible. The observations of stars at these four observatories are directed to the most accurate determination of the places of a limited number, and the deduction of their proper motions by comparison with the results obtained by Bradley, by Piazzi (with an altazimuth by Ramsden at Palermo), and by Groombridge; but at other observatories differential or zone observations of large numbers of stars have been made, with the object of making a complete and fairly accurate survey of the heavens, the rhomb or ring micrometer being used for this purpose. Among those who have applied themselves to this work are Lacaille at the Cape of Good Hope, La Lande at Paris, Bessel at Königsberg, Argelander at Bonn. These zone observations are now being repeated with the transit-circle at a number of observatories, associated together for the purpose of getting far more accurate places than was possible with the equatorial. A large number of observatories, chiefly in Germany and the United States, are engaged in a very different class of observations—viz., differential observations, with the

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Equatorial (q.v.), of comets and small planets as referred to comparison-stars, and the search for such objects; while at other observatories, notably that of Pulkowa, the measurement of double stars with the micrometer is the chief object. Of late years, two new subjects have been introduced into the routine of observatory work—photography and spectroscopy. The former was carried on for many years at Kew Observatory, under De La Rue's auspices, and at his private observatory at Cranford; and the work is now continued at Greenwich: the latter has been taken up at a number of Italian observatories, particularly at Rome by P. Secchi; and it now forms part of the regular system at Greenwich: while the observatories at Paris, Berlin, and Vienna are equipped for these physical observations, and in the United States and Australia they are vigorously carried on at several observatories—Melbourne, Australia, in particular, being provided with a four-ft. equatorial reflector for this purpose, as well as for examination of nebulae. The most important work of an observatory, however, consists, not in making observations which are easily multiplied, but in reducing and publishing them—a task of far greater labor, and requiring far higher qualifications. However various may be the observations, the method of eliminating their errors is the same in all cases, and similar mathematical considerations apply to their reduction, whether they be meridian observations, micrometer measures, measures of photographs, or spectroscopic observations; and when such treatment is required, in any inquiry, it should be undertaken at a public observatory, where this rigorous method will be applied.

The work of private observatories hardly admits of being specified, though its general character has above been indicated; it suffices to mention the observations of double stars and nebulae by the two Herschels, Groombridge's catalogue of circumpolar stars, Smyth's double-star measures, Carrington's Redhill catalogue and solar observations, the nebular observations of Lord Rosse and Lassell, De La Rue's long series of photographs, and the spectroscopic observations of Huggins and Lockyer.

In addition to regular astronomical observations of all kinds, national observatories are charged usually with distribution of time signals, and rating of chronometers for the navy—matters of great practical importance, especially in countries where time is communicated directly by telegraph to hundreds of towns.

In the United States, the first observatory was that of the Univ. of N. Car., 1831, burned 1838; the next, at Williams Coll., built 1837; then, 1838, at Western Reserve Coll., Ohio, under Prof. Loomis, and the high-school O. at Philadelphia; in 1844, the Cincinnati O., under the brilliant and energetic Prof. O. M. Mitchel (q.v.); following which, the West Point O., under Prof. Bartlett; the Naval O. at Washington, under Capt.

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Gilliss, with a 26-in. equatorial; the Harvard Univ. and Georgetown Coll. (D. C.) observatories, and others. The Dudley O., Albany, N. Y., 13-in. equatorial, was dedicated 1856. A telescope is but one item of equipment, and the work done with very large telescopes is not in proportion to their size; yet the size indicates a scale of expense—hence presumably of facilities for work. In 1872 an object-glass of 26 in. was made for the Washington O. In 1880 H. H. Warner built an O. for Prof. Swift at Rochester, N. Y., with object-glass 16 in., focal length 22 ft., and many improvements of dome, etc., by Prof. Swift. In 1887 notices are found of the Morrison O., Glasgow, Mo., 12½-in. equatorial; the McCormick 26-in. refractor; the Washburn 15½-in. equatorial; Bucknell Univ., Lewisburg, Penn., 10-in. equatorial; and the large Paine bequest to Harvard O. of \$164,000, and the Boyden fund of \$230,000. In 1888, June 1, the Lick O., on Mount Hamilton, Cal., 50 m. s. of San Francisco, was formally transferred, on completion, to the Univ. of Cal. Of the Lick bequest of \$750,000, all but \$90,000 had been expended. The object-glass of the telescope (largest in the world) is 38-in. diameter, giving a field of 36 in. and a focal length of 56 ft. 2 in.; the tube of sheet-steel 42-in. diam.; the dome 75-ft. diam., revolving with 225 lbs. horizontal pressure. The night-fogs of the coast, reaching up half the height of the mountain, have been found useful in shutting off the heat-radiation from the earth, that disturbs telescopic vision (see LICK OBSERVATORY). In the same year, 1888, the Dearborn O., with 18½-in. equatorial, was removed from Chicago to Evanston, Ill. In 1889 a 40-in. refractor was ordered for the Univ. of Southern Cal., \$200,000 being available; a new O. was established in Georgetown, D. C., for a 26-in. refractor; and Harvard Univ. received \$50,000 from Miss C. W. Bruce of New York, for a photographing telescope with 24-in. objective, focal length 11 ft., which Prof. Pickering proposes to place on some mountain. Yale, Amherst, etc., are active centres of astronomical work; also Hamilton Coll., N. Y., and Carleton Coll., Minn. Of private observatories, Prof. Rutherford's, New York city, was famous for its photographic results; and gentlemen of wealth, e.g., the late Samuel Wilde, Montclair, N. J., and the Hon. S. V. White, Brooklyn, N. Y., have mounted excellent instruments. The purely scientific results of work in this country must be sought in astronomical journals; among those of popular as well as scientific interest are the very numerous asteroids discovered by the late Prof. Peters of Hamilton Coll., the two satellites of Mars by Prof. Hall of Washington, and the many comets announced by Prof. Swift and others.

OBSERVE—OBSIDIAN.

OBSERVE, v. *ōb-zérv'* [OF. *observer*—from L. *observāre*, to mark, to note—from *ob*, intensive; *servo*, I watch or wait for]: to take notice of; to note; to mark; to see or behold with some attention; to utter or express, as a remark or opinion; to keep religiously; to celebrate; to comply with; to practice; to make a remark. OBSER'VING, imp.: ADJ. giving particular attention; habitually taking notice; remarking. OBSERVED', pp. *-zérvd'*. OBSER'VER, n. *-zér'vēr*, one who pays careful attention to things; one who keeps laws or customs; a spectator. OBSER'VINGLY, ad. *-lī*. OBSER'VABLE, a. *-vā-bl*, worthy of observation; remarkable. OBSER'VABLY, ad. *-blī*. OBSER'VABLENESS, n. *-bl nēs*, the state or quality of being observable or remarkable. OBSERVANCE, n. *ōb-zér'vāns* [F.—L.]: performance; rule of practice; ceremonial reverence in practice; performance of religious rites and ceremonies. OBSERVANDA, n. plu. *ōb'zér-vān'dā* [L.]: things to be observed. OBSERVANT, a. *ōb-zér'vānt*, attentive in viewing or noticing; watchful; mindful: N. a diligent observer. OBSER'VANTLY, ad. *-lī*. OB'SERVANTS, n. plu., in *OE.*, slavish attendants. OBSERVATION, n. *ōb'zér-vā'shūn* [F.—L.]: the act of noticing or remarking; the expression in words of what is observed or thought; comment or remark; in *Scrip.*, outward show, as, 'the kingdom of God cometh not with observation;' exhibition; in *astron.* and *nav.*, the angular measurement of any space in the heavens; in *science*, the act of ascertaining temperature, or of noting or scrutinizing some fact or occurrence in nature. OB'SERVA'TIONAL, a. *-āl*, containing remarks. OBSERVATOR, n. *ōb'zér-vā tēr* [L.]: one who observes. OBSERVATORY, n. *ōb-zér'vā-tēr-ī*, building fitted up and set apart for astronomical and physical observations (see above).—SYN. of 'observant, a.': regardful; obedient; submissive;—of 'observation': notice; attention; comment; note; remark.

OBSIDIAN, n. *ōb-sīd'ī-ān* [Gr. *opsiānos*, a kind of pumice-stone of a glassy appearance—less probably from *Obsidiūs*, a Roman who first brought it from Ethiopia]: glassy lava, almost indistinguishable from artificial glass slag; a true native glass, found near many volcanoes. This mineral was accurately described by Pliny under the name which it still bears. It is composed of silica (70 to 80 per cent.), alumina, lime, soda, potash, and oxide of iron. It is hard and brittle, with remarkably vitreous lustre and perfectly conchoidal fracture, the edges of the fractures very sharp, and cutting like glass. It varies from semitransparency to translucency only on the edges. It is often black, or very dark gray; sometimes green, red, brown, striped, or spotted; sometimes *Chatoyant* (q.v.) or *avanturine*. It occurs in volcanic situations, and often in close connection with pumice, in roundish compact pieces, in grains, and in fibres. It is capable of being polished, but is apt to break in the process. It is made into boxes, buttons, eardrops, and other ornamental articles; and anciently,

OBSIDIONAL—OBSTINATE.

before the uses of the metals were well known, it was employed, in different parts of the world, for making arrow and spear heads, knives, etc. It is found in Iceland, the Lipari Isles, Vesuvius, Sardinia, Hungary, Spain, Teneriffe, Mexico, S. America, Madagascar, Siberia, etc. Black O. was used by the ancients for making mirrors, and for this purpose was brought to Rome from Ethiopia. It was used similarly in Peru and Mexico. Mirrors of Black O. are indeed still employed by artists. Chatoyant or Avanturine O. is very beautiful when cut and polished; and ornaments are made of it.

OBSIDIONAL, a. *ōb-sīd' yŭn-ăl* [F. *obsidional*—from L. *obsidiōnālis*—from L. *obsidiōnem*, a siege or blockade]: pert. to a siege. **OBSIDIONAL CROWN**, among the Romans, a mark of honor in the form of a crown, constructed of grass and twigs interwoven, and bestowed on him who held out in a siege, or caused one to be raised.

OBSOLESCE^{NT}, a. *ōb'sō lēs'sēnt* [L. *obsoles'cens* or *obsolescen'tem*, growing out of use]: going out of use. **OB'SOLES'CENCE**, n. *-sēns*, the state of becoming obsolete or going out of use.

OBSOLETE, a. *ōb'sō-lēt* [L. *obsoletus*, grown out of use]: gone out of use; disused; out of date; in *bot.*, imperfectly developed or abortive—applied to the calyx when it is in the form of a rim; in *zool.*, applied to a part or spot, or to some distinctive character, scarcely discoverable. **OB'SOLETELY**, ad. *-lī*. **OB'SOLETENESS**, n. *-nēs*, the state of being obsolete; in *zool.*, indistinctness; want of development.—**SYN.** of 'obsolete': old; ancient; antique; antiquated; old-fashioned; disused; neglected; obscure; rudimental.

OBSTACLE, n. *ōb'stā-kl* [F. *obstacle*; It. *ostaculo*, an obstacle—from L. *obsta'cŭlum*—from *obsto*, I stand in the way—from *ob*, in the way; *sto*, I stand]: that which stands in the way and hinders progress; an impediment; an obstruction.—**SYN.**: difficulty; hindrance.

OBSTETRICS, n. *ōb-stēt'rīks* [L. *obstetrix*, a midwife; *obstetriciŭs*, obstetric—from *obsto*, I stand before or in the way]: the art and science of midwifery; the art of assisting women in child-birth, and treating their diseases during pregnancy (see **MIDWIFERY**). **OBSTET'RIC**, a. *-rīk*, pert. to midwifery. **OBSTETRICIAN**, n. *ōb'stē-trīsh'ăn*, an accoucheur; a midwife.

OBSTINATE, a. *ōb'stī-nāt* [L. *obstinātus*, determined, resolute—from *ob*, in the way; *sto*, I stand; Sp. *obstinado*, headstrong]: firmly adhering to an opinion or purpose, in an ill sense; inflexible; unyielding; stubborn. **OB'STINATELY**, ad. *-lī*. **OB'STINATENESS**, n. *-nēs*, or **OBSTINACY**, n. *ōb'stī-nā-sī*, a firm adherence to an opinion or purpose—usually unreasonable; a fixedness of mind that will not yield; stubbornness. **OBSTINATION**, n. *ōb'stī-nā'shŭn*, in *OE.*, the quality of being obstinate.—**SYN.** of 'obstinate': obdurate; firm; immovable; pertinacious; resolute; heady; headstrong; contumacious; perverse; refractory; opinionated; persistent.

OBSTIPATION—OBTEMPER.

OBSTIPATION, n. *öb'stī-pā'shŭn* [L. *obstipārē*, to lean on one side, to stop up]: the act of stopping up; costiveness in the bowels.

OBSTREPEROUS, a. *öb-strēp'ér-ŭs* [L. *obstrep'erus*, clamorous; *obstrepērē*, to make a noise against—from *ob*, against; *strepo*, I make a noise]: very noisy; clamorous; making a tumultuous noise; turbulent. **OBSTREP'EROUSLY**, ad. *-lī*. **OBSTREP'EROUNESS**, n. *-nēs*, the state or quality of being loudly clamorous or unruly.

OBSTRUCTION, n. *öb-strīk'shŭn* [L. *obstructionem*—from *ob*, in the way; *strictus*, tied up, bound]: in *OE.*, obligation; bond.

OBSTRUCT, v. *öb-strŭkt'* [L. *obstructus*, stopped or blocked up—from *ob*, in the way; *struo*, I build]: to stop or block up; to retard or hinder; to impede; to interrupt. **OBSTRUCT'ING**, imp. **OBSTRUCT'ED**, pp.: **ADJ.** blocked up; impeded; hindered. **OBSTRUCT'ER**, n. *-ér*, one who obstructs. **OBSTRUCTION**, n. *öb-strŭk'shŭn* [F.—L.]: anything which hinders passage or progress; impediment. **OBSTRUC'TIVE**, a. *-tīv* [F. *obstructif*—from L. *obstructivus*]: hindering; causing impediment: N. one who or that which hinders progress; impediment. **OBSTRUC'TIVELY**, ad. *-lī*.—**SYN.** of 'obstruct': to clog; encumber; embarrass; fetter; retard; prevent; shackle; hinder; bar; barricade; stop; check; choke; oppose;—of 'obstruction': obstacle; bar; difficulty; barrier; check; hindrance.

OBSTRUENT, a. *öb'strŭ-ěnt* [L. *obstruen'tem*, shutting up by building against—from *ob*, against; *struo*, I build: F. *obstruer*, to obstruct]: blocking up or hindering: N. anything which obstructs the natural passages of the body.

OBTAIN, v. *öb-tān'* [F. *obtenir*—from L. *obtinērē*, to hold or keep—from *ob*, against; *tenēō*, I hold: Sp. *obtener*, to obtain]: to get possession of; to procure; to gain; to acquire; to continue in use; to prevail; to be established in practice; in *OE.*, to keep; to hold. **OBTAIN'ING**, imp. **OBTAINED'**, pp. *-tānd'*. **OBTAIN'ER**, n. *-ér*, one who obtains. **OBTAINABLE**, a. *öb-tān' ā-bl*, that may be obtained.—**SYN.** of 'obtain': to attain; win; earn; get.

OBTECTED, a. *öb-těkt'ed* [L. *obtectus*, pp. of *obtego*, I cover over—*ob*, over; *tego*, I cover]: in *entom.*, term applied to a kind of insect metamorphosis, in which the growing wings, autlia, antennæ, and thoracic legs are only partially covered by the pupæ integument, being lodged in recesses on the inner surface, which make corresponding projections on the exterior, where their form and position may be recognized. It characterizes the *Lepidoptera*.

OBTEMPER, v. *öb-tēm'pēr* [F. *obtempérer*, to obey in law—from L. *obtemperārē*, to comply with, to obey]: to carry out, as the injunctions of an ecclesiastical court; to obey. **OBTEM'PERING**, imp. **OBTEM'PERED**, pp. *-érd*.

OBTEST—OBVIOUS.

OBTEST, v. *ōb-tĕst'* [L. *obtestārī*, to declare as a witness, to beseech—from *ob*, against; *testis*, a witness]: to invoke; to supplicate; to entreat; to protest. **OBTEST'ING**, imp. **OBTEST'ED**, pp. **OBTESTATION**, n. *ōb-tĕs-tā'shŭn*, an adjuring; solemn entreaty.

OBTRUDE, v. *ōb-trōd'* [L. *obtru'dērĕ*, to thrust against; *obtru'sŭs*, thrust against—from *ob*, against; *trudo*, I thrust]: to thrust or push in when not invited or wanted, as one's self or one's opinion; to urge or offer with unreasonable importunity. **OBTRU'DING**, imp. **OBTRU'DED**, pp. **OBTRU'DER**, n. *-dĕr*, one who obtrudes. **OBTRUSION**, n. *ōb-trō'zhŭn*, the act of obtruding. **OBTRU'SIVE**, a. *-sĭv*, disposed to obtrude. **OBTRU'SIVELY**, ad. *-lĭ*.

OBTUND, v. *ōb-tŭnd'* [L. *obtundĕrĕ*, to blunt or dull—from *ob*, against; *tundo*, I beat]: to blunt; to deaden; to render blunt. **OBTUND'ING**, imp.: N. the blunting or taking away a sharp corner. **OBTUND'ED**, pp.

OBTURATORS, n. plu. *ōb'tŭ-rŭ tĕrz* [L. *obturātus*, stopped or closed up]: in *anat.*, a name applied to two muscles which move the thigh backward and roll it upon its axis; in *surg.*, a plug for closing an aperture.

OBTUSE, a. *ōb-tŭs'* [L. *obtŭsus*, blunt—from *ob*, upon; *tundo*, I beat: F. *obtus*: Sp. *obtusos*]: not pointed or acute; being greater than a right angle, or one of 90°; dull; stupid; in *bot.*, with a rounded or blunt termination. **OBTUSE'LY**, ad. *-lĭ*. **OBTUSE'NESS**, n. *-nĕs*, the state or quality of being obtuse; bluntness; dulness of understanding. **OBTUSION**, n. *ōb-tŭ'zhŭn*, the act of dulling or making obtuse; the state of being dulled. **OBTUSE-ANGLED**, a. having an angle greater than a right angle. **OBTUSE-ANGULAR**, a. having obtuse angles.

OBVERSE, n. *ōb'vers'* [L. *obversus*, turned toward or against—from *ob*, against; *versus*, turned: F. *obvers*]: the face of a coin which bears the head or principal symbol, as opposed to the other side, called the *reverse* (see **NUMISMATICS**): **ADJ.** *ōb'vers'*, bearing the face; in *bot.*, having the base narrower than the top, as in a leaf; having the point of the radicle in the seed approaching the hilum. **OBVERSE'LY**, ad. *-lĭ*.

OBVERT, v. *ōb-vĕrt'* [L. *obvertĕrĕ*, to turn toward or against—from *ob*, against; *verto*, I turn]: to turn toward; to face. **OBVERT'ING**, imp. **OBVERT'ED**, pp.

OBVIATE, v. *ōb'vĭ-āt* [L. *obviātus*, met in the way—from *obvĭus*, meeting in the way—from *ob*, against; *vĭā*, a way: F. *obvier*, to obviate]: *literally*, to meet in the way; to remove, as difficulties; to withstand; to prevent; to hinder. **OB'VIATING**, imp. **OB'VIATED**, pp.

OBVIOUS, a. *ōb'vĭ-ŭs* [L. *obvĭus*, meeting in one's way, easy, not difficult (see **OBVIATE**)]: easily perceived or discovered; plain; evident; in *OE.*, exposed; opposed in front; liable. **OB'VIOUSLY**, ad. *-lĭ*. **OB'VIOUSNESS**, n. *-nĕs*, the state of being plain or evident.—**SYN.** of 'obvious': manifest; clear; apparent; visible; conspicuous.

OBVOLUTE--OCCAM.

OBVOLUTE, a. *ōb'rō-lōt* [L. *obvolūtus*, wrapped round—from *ob*, around; *volvo*, I roll]: in *bot.*, having the margins of one leaf alternately overlapping those of the leaf opposite to it.

OC, *ōk*: another form of the prefix **OB**, which see.

OC, n. *ōk*: a Turkish arrow.

OCARINA, n. *ōk-ar-ē'na* [It.]: in *mus.*, series of seven musical instruments made of terra-cotta pierced with small holes; invented by a company of performers calling themselves the Mountaineers of the Apennines. With these instruments, of soft and sweet, yet 'traveling,' quality of tone, operatic melodies with simply harmonized accompaniments were given.

OCCAM, *ōk'kam*, **WILLIAM OF**, surnamed *Doctor Singularis et Invincibilis*: famous schoolman: b. England, at the village of Ockham, co. of Surrey, near the end of the 13th c.; d. about 1349. Very little is known of his early life. He is said to have been induced by the Franciscans to enter their order while a boy, to have been sent by them to Merton College, Oxford, and to have held several benefices in his native country, which he soon resigned. Early in the 14th c., it is supposed he proceeded to Paris, where he attended the lectures of John Duns Scotus, of whose philosophy he was afterward the most formidable opponent. Here he soon became prominent by the boldness of his ecclesiastical views. Philippe le Bel, King of France, having forbidden Pope Boniface VIII. to levy contributions in his dominions, the latter, in retaliation, excommunicated him. O. rushed to the defense of the monarch, and, in his *Disputatio inter Clericum et Militem, super Potestate Prælati Ecclesiæ atque Principibus Terrarum Commissa*, denies that the popes have authority in temporal affairs, and boldly declares that all who claim for them such authority ought to be expelled from the church as heretics. Meanwhile, from being a listener, he had become a lecturer, in philosophy. The system which he advocated—for he was not its originator—is known as *Nominalism* (q.v.); but it had never before received so rigorously logical and rational a treatment—hence his epithet of *Invincibilis*. The work in which his views are set forth is *Expositio Aurea, et admodum utilis super totam Artem Veterem*. It contains a series of commentaries upon the *Isagoge* of Porphyry, and on the *Categories* and *Interpretation* of Aristotle, with a special treatise headed *Tractatus Communitatum Porphyrii*, and a theological opusculum on Predestination. It is intended as a demolition of the moderns—i.e., the scholastics—and shows that in their method they have completely departed from the principles and methods of the great Stagirite, for whom, like every sound and solid thinker, he shows the deepest respect and admiration. About 1320, he again plunged into ecclesiastical controversy. A certain Narbonese priest, having affirmed that Jesus Christ and his apostles held everything in com-

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mon, and that every ecclesiastical possession is a modern abuse, was pounced upon by the inquisitors, and defended by a certain Berenger Talon, a Franciscan monk of Perpignan. But Berenger's defense of apostolical poverty was naturally very disagreeable to the pope, John XXII., who therefore condemned it. Berenger was, however, vigorously supported by his order, and, among others, by Michael de Cesena, gen.-superior, by Bonagratia of Bergamo, and by William of Occam, who attacked the pope with great vehemence and trenchant logic. Shortly afterward they were arrested as favorers of heresy, and imprisoned in Avignon. But while their trial was proceeding, Michael de Cesena and O., knowing what little mercy or justice they had to expect from their accusers and judges, made their escape to the Mediterranean, and were received at a little distance off shore on board a galley of Ludwig, King of Bavaria, patron of the Franciscan antipope, Peter of Corbaras, and one of the most powerful sovereigns in Europe. The remainder of O.'s life was spent at Munich, where, safe from the machinations of his enemies, he continued to assail at once the errors of papistry in religion and of realism in philosophy. He died probably at Munich.

O. was probably the first logician and the most rational philosopher among the whole body of schoolmen. His practicalness, vigorous common-sense, and wholesome incredulity show him the countryman of Locke and Hobbes. Besides the works above mentioned, O.'s principal writings are: *Dialogus in tres Partes distinctus, quarum prima de Hæreticis, secunda de Erroribus Joannis XXII., tertia de Potestate Papæ, Conciliorum et Imperatoris*; *Opus Nonaginta Dierum contra Errores Joannis XXII.*; *Compendium Errorum Joannis Papæ XXII.*; *Decisiones Octo Quæstionum de Potestate summi Pontificis*; *Super Quatuor Libros Sententiarum Subtilissimæ Quæstiones earumque Decisiones* (based on Peter the Lombard's famous *Sententiæ*, and containing nearly the entire theology of Occam: these *Decisiones* were long almost as renowned as the *Sententiæ* which gave them birth); *Antiloquium Theologicum*; *Summa Logices ad Adamum*; and *Major Summa Logices*.—See Luke Wadding's *Scriptores Ordinis Minorum* (1650); Hauréau's *De la Philosophie Scolastique* (1848; new ed. 1873); and the works of Kaulich, Stöckl, Prantl, and Erdmann.

OCCASION, n. *ōk-kā'zhŭn* [F. *occasion*—from L. *occāsīōnem*, an occasion, an opportunity—from *ob*, in the way; *cāsus*, that which happens, an accident: It. *occasione*]: an occurrence; an incident; an opportunity; favorable time or season; incidental need: V. to cause; to produce; to give rise to; to bring about. OCCA'SIONING, imp. OCCA'SIONED, pp. *-zhŭnd*. OCCA'SIONER, n. *-ēr*, one who occasions or causes. OCCA'SIONAL, a. *-āl*, occurring at times; happening as opportunities occur; produced in connection with some special event; in *metaph.*, acting in the way of assistance. OCCA'SIONALLY,

OCCASIONALISM—OCCLUDED.

ad.-ñ. OCCA'SIONALISM; n. -*āl-izm*, in *metaph.*, the doctrine which teaches that God, and not the will, causes and controls bodily actions (see below). OCCA'SIVE, a. -*siv*, pert. to the falling or setting sun; western. ON OCCASION, from time to time; as it may happen.—SYN. of 'occasion, n.': need; necessity; use; casualty; chance; convenience; requirement; exigency.

OCCA'SIONALISM, or the DOCTRINE OF OCCASIONAL CAUSES (see CAUSE): philosophical system devised by Descartes (q.v.) and his school, to explain the action of mind on matter, or, more correctly, the combined, or at least the synchronous, action of both. It is a palpable fact that certain actions or modifications of the body are accompanied by corresponding acts of mind, and *vice versa*. This fact, though it presents no difficulty to the popular conception, according to which each is supposed to act directly upon the other—body upon mind, and mind upon body—has long been to philosophers a subject of deep speculation. It is difficult to conceive the possibility of any *direct* mutual interaction of substances so dissimilar, or, rather, so disparate; and more than one system has been devised for explanation of the problem as to their relations in operations attributable to both. According to Descartes and the Occasionalists, the action of the mind is not and cannot be *the cause* of the corresponding action of the body. But they hold that, whenever any action of the mind takes place, God directly produces, in connection with it and by reason of it, a corresponding action of the body; and in like manner, conversely, they explain the coincident or synchronous actions of the body and the mind. It was in opposition to this view that Leibnitz, believing the Cartesian system to be open to nearly equal difficulties with that of the direct action, devised his system of *Preëstablished Harmony*: see LEIBNITZ. His real objection to the Occasionalist hypothesis is that it supposes a perpetual action of God upon creatures, and is really only a modification of the system of 'direct assistance.'

OCCIDENT, n. *ōk'sī-dēnt* [F. *occident*, west—from L. *occiden'tem*, falling or going down—from *ob*, in the way; *cādo*, I fall: It. *occidente*]: the quarter where the sun goes down; the west. OC'CIDENT'AL, a. -*dēnt'āl*, western. OCCIDENTAL DIAMOND, a precious stone of inferior hardness and beauty, so called by lapidaries.

OCCIPUT, n. *ōk'sī-pūt* [L. *occiput*, the back part of the head—from *ob*, over, against; *caput*, the head]: the hinder part of the head or skull—the forepart being called the *sinciput*. OCCIPITAL, a. *ōk-sīp'ī-tāl* [F.—L.]: pert. to the back part of the head or skull.

OCCLUDED, a. *ōk-klō'dēd* [L. *occludērē*, to shut or close up]: inclosed; shut in. OCCLU'SION, n. -*zhūn* [L. *occlūsus*, shut up]: in *chem.*, the absorption of gases within metals, as hydrogen by palladium.

OCCULT—OCCULTISM.

OCCULT, a. *ōk-kūlt'* [F. *occulte*—from L. *occultus*, hidden, concealed: It. *occulto*]: concealed; secret; hidden from the eye or understanding; unknown; undiscoverable. **OCCULTISM**, n. *ōk-kūlt'izm* [Eng. *occult*]: system of theosophy practiced in the East, specially in India. Its adepts claim to possess secrets of an ancient religion and philosophy, by which they are enabled to produce seemingly miraculous effects by purely natural means: see **THEOSOPHY**. **OCCULT'IST**, n. one versed in the mysteries of occultism. **OCCULT'LY**, ad. -*lī*. **OCCULT'NESS**, n. -*nēs*, the state of being occult. **OCCULTATION**, n. *ōk'kūl-tā'shūn* [F.—L.]: the concealing of a heavenly body from our sight by the intervention of some other one (see below). **OCCULT'ED**, a. hidden, as a star; secret. **OCCULT SCIENCES**, certain so-called sciences of the middle ages, as magic, alchemy, and astrology.

OCCULTA'TION: term meaning *eclipse*; but, while eclipse is confined by usage to the obscuration of the sun by the moon and of the moon by the earth's shadow, occultation is restricted to the eclipse of stars or planets by the moon. Occultations are frequent; they are confined to a belt of the heavens about $10^{\circ} 17\frac{1}{2}'$ wide, parallel to and on both sides of the equinoctial, and extending to equal distances n. and s. of it, being the belt within which the moon's orbit lies. These phenomena serve as data for measurement of the moon's parallax; they are employed also occasionally in calculation of longitudes. As the moon moves in her orbit from w. to e., the O. of a star is made at the moon's eastern limb, and the star emerges on the western limb. When a star is occulted by the dark limb of the moon (a phenomenon which can occur only between new moon and full moon), it appears to an observer as if it were suddenly extinguished, and this appearance is most deceptive when the moon is only a few days old. When an O. occurs between full moon and new moon, the reappearance of the star at the outer edge of the dark limb produces an equally startling effect. 'It has often been remarked,' says Herschel, 'that, when a star is being occulted by the moon, it appears to advance actually *upon* and *within* the edge of the disk before it disappears, and that sometimes to a considerable depth.' This phenomenon he considers an optical illusion, though he admits the possibility of its being caused by the existence of deep fissures in the moon's substance. Occultations of stars by planets and their satellites are rarer than lunar occultations, and still more infrequent are occultations of one planet by another. Occultations are calculated in the same way as eclipses; but the calculation is simplified in the case of the fixed stars, from their lack of sensible motion, semidiameter, and parallax.

OCCULT'ISM: see **THEOSOPHY**.

OCCUM—OCCUPANCY.

OCCUM (or **Occom**), *ōk'kūm*, **SAM(P)SON**: Indian preacher: about 1723–1792, July; b. Mohegan, near Norwich, Conn. In 1739 a religious interest followed the preaching of the gospel among the Indians, and O. was among the converts. He learned to read the Bible, and, at the age of 19, taught an Indian school at Lebanon, Conn., continuing 4 years, and afterward at New London; later, for 11 years, he taught a similar school at Montauk, L. I., at the same time preaching to neighboring tribes with good results. He was ordained by the Suffolk presbytery 1759. In 1766 he was sent to England, and preached to throngs in various places. Large gifts were the result, and his teaching, on his return, was transferred to an Indian school connected with the beginning of Dartmouth College; but he travelled widely in his work among his fellow-aborigines. In 1786 he was teaching at Brotherton, near Utica, N. Y., his school composed of removed Stockbridge and Mohegan Indians. There is an account of the Montauk Indians by him, which, with his sermon at the execution of Moses Paul, an Indian, at New Haven, Conn., are in the *Mass. Hist. Collections*, 1st series, X. Further notices of him are in Dwight's *Travels* and Gillett's *Hist. Presb. Chh. in U. S. A.*

OCCUPANCY, in Law: the taking or holding possession of those things which belong to nobody: this was the primitive method of acquiring property, but has since been restricted and curtailed by the laws of civilized society. Both real and personal property may be acquired by O. The right of O. to real property extended originally to the single instance where a person owning an estate only during the life of some other person died during the life of that person; in such a case there was no one who had a legal claim to the property. The person who was to succeed the life-tenant could not legally take the property, because the life-estate had not expired; the heir of the life-tenant could not take it, because the life-tenant's estate was not one of inheritance; the personal representatives of the life-tenant had no claim to it, as it was not considered personal property. The result was that any one who might first take possession of it became the owner of it by O., and was called the general occupant. This doctrine of general O. has now been practically abolished in England, and in most of the United States, by statutes providing that this interest remaining after the death of the tenant during the life of another shall form part of the personal assets in the hands of the executors or administrators; in some states, the estate is, by statute, descendible as real estate.

The personal things that may be acquired by O. are:
 1. The goods and chattels belonging to alien enemies: these may be seized and no restitution compelled; but the statutes of the United States and of England require that, in order to vest the property of a capture in the captors, a legal sentence of condemnation should be

OCCUPY.

passed by a prize court. 2. Whatever movables are found upon the face of the earth or in the sea, and are unclaimed by any owner, are supposed to be abandoned by the last proprietor, unless they have been thrown into the sea in peril of shipwreck, to save the vessel, or have been lost in a shipwreck. 3. The benefits of the elements, like the light, air, and water, may be acquired by O.: this is known in England as the doctrine of 'ancient lights'; this has been rejected in the United States, and no property can be there acquired in light and air. 4. Wild animals become the property of the captor as soon as they are seized, and continue his property so long as they remain in his possession; but, once having regained their liberty, the property of the captor ceases in them, and they belong to him who first again seizes them. 5. The doctrine of property arising from accession is grounded on this right of O.: thus, if any substance received an accession by natural or artificial means, as by the growth of vegetables, the pregnancy of animals, or the conversion of wood or metals into utensils, the original owner of the thing was entitled to own it in its improved state, by his right of possession of it. 6. In case of the wilful and fraudulent confusion or admixture of goods of two persons, so that the shares of each are incapable of being distinguished, the right of O. in such goods is held to be in him who has not interfered; and the person causing the mixture loses his property in the goods. 7. As the right of O. is supposed by some authorities to be founded on the personal labor and invention of the occupant, they have placed the rights which authors have in their unpublished manuscripts among those things personal that are acquired by O.: this right of literary property is now to a greater or less extent protected by copyright statutes in all civilized countries.

OCCUPY, v. *ōk'kū-pī* [F. *occuper*, to occupy—from L. *occupāre*, to take possession of—from *ob*, against; *capīō*, I take: It. *occupare*]: to take possession of; to hold or keep for use; to take up, as room or space; to busy one's self; to employ, as time; to use; to engage, as time and attention; to follow a business. OC'CUPYING, imp. OC'CUPIED, pp. *-pīd*. OC'CUPIER, n. *-pī-ēr*, or OC'CUPANT, n. *-pānt* [F.—L.]: one who has possession. OC'CUPANCY, n. *-pān-sī*, the act of taking or holding possession. OC'CUPATION, n. *-pā'shūn* [F.—L.]: the act or state of occupying; that which engages the time and attention; employment; business; trade. OCCUPATION BRIDGE, a bridge carried over or under a line of railway, to connect the parts of a farm or estate severed by the line. OCCUPATION ROAD, private road on an estate or farm.—SYN. of 'occupation': occupancy; tenure; use; possession; calling; office; profession; avocation; engagement; vocation.

OCCUR—OCEANUS.

OCCUR, v. *ōk-kēr'* [F. *occurre*, to occur—from L. *occurrere*, to run or come to meet—from *ob*, in the way; *curro*, I run]: to happen; to be met with; to be presented to the mind or memory; to appear here and there. **OCCURRING**, imp. *ōk-kēr'ring*. **OCCURRED'**, pp. *-kērd'*. **OCCURRENCE**, n. *ōk-kēr'rēns* [F.—L.]: that which happens; an incident; any single event. **OCCUR'RENT**, n. *-rēnt* [OF.—L.]: in *OE.*, that which happens; an event; chance.

OCEAN, n. *ō'shūn* [OF. *ocean*—from L. *oceānus*; Gr. *ōkēānos*, the great sea: It. *oceano*: perhaps Gr. *ōkus*, swift; *naō*, I flow]: vast expanse of salt water; the main—like **SEA**, in its general acceptation, denoting the body of salt water that separates continent from continent, and is the receptacle for the waters of rivers. The surface of the ocean is about three-fifths of the whole surface of the earth. Although no portion of it is completely detached from the rest, the intervening continents and islands mark it off into divisions, distinguished by special names: the *Atlantic Ocean* (q.v.), between America and Europe and Africa; the *Pacific Ocean* (q.v.), between America and Asia; the *Indian Ocean* (q.v.), s. of Asia, and limited e. and w. by Australasia and s. Africa; the *Arctic Ocean* (q.v.), surrounding the n. pole; the *Antarctic Ocean* (q.v.), surrounding the s. pole. For general features and characteristics of the ocean, see **SEA**. Figuratively, any very great or immense expanse, as the *ocean* of eternity: **ADJ.** pert. to the great expanse of salt water. **OCEANIC**, a. *ō'shē-ān'ik*, relating to the ocean; occurring in, or produced by, the ocean. **OCEANIDES**, n. plu. *ō'sē-ān'ī-dēz*, sea-nymphs, daughters of **OCEANUS**, *ō-sē-ā-nūs*, a sea-god; called sometimes Naiads.

OCEANIA, *ō-shē-ā'nī-a*, or **OCEANICA**, *ō-shē-ān'ē-ka*: the fifth division of the globe, comprising all the islands which intervene between the s.e. shores of Asia and the w. shores of America. Some geographers divide it into three great sections—Malay Archipelago (q.v.) or Malaysia; Australasia (q.v.) or Melanesia; and Polynesia (q.v.). Others make five divisions—Polynesia, Micronesia, Melanesia, Australasia, Malaysia.

OCEANUS, *ō-sē-ā-nūs*: powerful sea-deity in classical mythology; son of *Cœlus* (heaven) and *Terra* (earth). By his marriage with *Tethys*, he became father of 3,000 sea-nymphs (*Oceanides*), and as many river-gods. Homer declares him to be the father of all the gods. He is generally represented as an old man with long beard, sitting upon the waves, while ships sail in the distance. He holds a pike in his hand, or a sea-monster stands near. The ancients worshipped him with superstitious reverence, as the deity to whom they intrusted themselves on a voyage.

OCELLATED—OCHER.

OCELLATED, a. *ō'sēl-lā-tēd* [L. *ōcellātum*, anything marked with small spots or eyes—from *ocellus*, a little eye—from *ocūlus*, an eye] : in *bot.*, having a broad, round spot of one color, with a spot of a different color in the centre, resembling an eye; formed with the figures of little eyes. OCELLUS, n. *ō-sēl'lūs*, a little eye; a minute simple eye found in many inferior animals. OCELLI, n. plu. *ō-sēl'lī*, in *zool.*, the simple eyes of many invertebrates, as spiders, crustaceans, and mollusks.

OCELOT, n. *ō'sē-lōt* [Mexican, *ocelotl*] : name of several species or varieties of *Felidæ*, natives of tropical S. America; allied to the leopard by flexibility of body, length of tail, and other characters, but much smaller. They are called sometimes Tiger-cats; and are usually included in the genus *Leopardus* by those who divide the *Felidæ* into a number of genera. They are inhabitants of forests, and very expert in climbing trees. Their prey consists in great part of birds. They are beautifully marked and colored. The best-known species, or COMMON O. (*Felis pardalis*), native of the warm parts of America, from Arkansas to Paraguay, is from two ft.



Ocelot (*Felis pardalis*).

nine inches to four ft. long, exclusive of the tail (which is from 11 to 15 inches, and of nearly uniform thickness). The ears are thin, short, and pointed. The muzzle is rather elongated. The colors vary considerably, but the ground tint is always rich red or tawny, blending finely with the dark brown on the margins of the open spots, of which there are chains along the sides; the head, neck, and legs also being variously spotted or barred with dark brown or black. The O. is easily tamed, and is gentle and playful, but excessively mischievous. It may be fed on porridge and milk, or other such food, and is said to be then more gentle than if permitted to indulge in carnivorous appetites.—Very similar to the Common O. are several other American species, as the LINKED O. (*F. catenata*), the LONG-TAILED O. (*F. macrourus*), the CHATI (*F. mitis*), etc. The similarity extends to habits and disposition, as well as form.

OCHER : see OCHRE.

OCHIL HILLS—OCHLOCRACY.

OCHIL HILLS, *ōch'īl*: hilly range in Scotland, occupying parts of the counties of Perth, Clackmannan, Stirling, Kinross, and Fife; from the vicinity of Stirling n.e. to the Firth of Tay; 24 m. in length, about 12 m. in breadth. The highest summit is Bencleugh (2,352 ft.), near the s.w. extremity. The hills, formed chiefly of greenstone and basalt, contain silver, copper, and iron ores. They afford excellent pasturage.

OCHINO, *o-kē'no*, **BERNARDINO**: 1487–1565; b. Siena, Tuscany: Italian reformer. He received a meagre education in the languages, studying the Greek but little and the Hebrew none; joined the Franciscans, and 1534 the strict order of the Capuchins. He soon became widely known as an eloquent preacher. After hearing him preach a series of Lenten sermons, Charles V. is said to have exclaimed, 'This man could move the stones themselves!' After preaching at Naples, he visited Venice and other large cities. The churches in which he preached were filled to overflowing. He became confessor to Paul III., and a general of the Capuchins 1538. While preaching at Naples 1540, he departed from the Rom. Cath. standards of doctrine to such an extent that he incurred the displeasure of the dignitaries. He removed to Venice, and, though the Capuchins re-elected him general, he was summoned to Rome on a charge of heresy. He commenced the journey, but was persuaded by friends to leave the country. He went to Geneva 1542, and preached to Italian refugees, to Augsburg 1545, where he preached to an Italian church, and two years later to London, in order to escape the demands of the emperor that he be returned to Italy. He preached in London till Mary became queen, when he went to Geneva. His criticisms on the burning of Servetus (q.v.) made him unpopular, and he removed to Zürich. Here he published some theol. works which indicated a tendency to independent thought on certain doctrines; and on a charge of heresy he was expelled. He went to Poland, from which country, in common with all foreigners not Rom. Catholics, he was banished 1564, and lived but a short time after his return to Germany. He was one of the most earnest and fervent preachers of his time—not readily submissive to authority in forming his creed—not intellectually in sympathy with dogmatic forms of Christian truth—hence often misunderstood in that age of sharp and stern antagonism. He published many sermons and several theol. works.

OCHLESIS, n. *ōk-lē'sīs* [Gr. *ochlesis*, disturbance, annoyance]: in *pathol.*, the overcrowding of dwelling-houses, producing unhealthiness and susceptibility to disease.

OCHLOCRACY, n. *ōk-lōk'ră-sī* [Gr. *ochlos*, the populace or mob; *krateia*, might, power]: a government controlled by the populace; a mob government. **OCHLOCRATIC**, a, *ōk-lō-krăt'īk*, relating to ochlocracy.

OCHNACEÆ—OCHROLEUCOUS.

OCHNACEÆ, *ōk-nā'sē-ē*: natural order of exogenous plants, containing not quite 100 known species, natives of tropical and subtropical countries. Some are trees, most of them undershrubs; all remarkable for smoothness in all parts. Bitter and tonic qualities prevail in this order, and some species are medicinally used in their native countries. The seeds of *Gomphia jabotapita* yield an oil, which is used in salads in the W. Indies and S. America.

OCHRA and OCHRO: other spellings of OKRA, which see.

OCHRE, or OCHER, n. *ō'kér* [L. and Gr. *ōchra*—from Gr. *ōchros*, pale, pale yellow: OF. *ocre*]: kind of fine clay used as a pigment, varying in color from a pale yellow to a deep orange or brown. The name ochres is applied usually to clays colored with the oxides of iron in various proportions, giving to the clay a lighter or deeper color. Strictly speaking, the term belongs only to a combination of peroxide of iron with water. From many mines, much water charged with ferruginous mud is continually pumped up, and from this water the colored mud or ochre settles. Thus large quantities are procured from the tin mines of Cornwall, England, and the lead and copper mines of N. Wales and the Isle of Man. Ochres occur also ready formed, in beds several ft. thick, in the various geological formations, and are occasionally worked, as at Shotover Hill, Oxford, in Holland, and at many other places in Europe and America. Very remarkable beds are worked in Canada. The ochres so obtained are either calcined for use or not, according to the tint wanted. Calcining adds much to the depth of color, by increasing the degree of oxidation of the contained iron. The most remarkable varieties of ochre are the Siena Earth (Terra di Siena), from Italy; the so-called red chalk, with which sheep are marked; Dutch Ochre; Armenian Bole or Lemnian Earth; Italian Rouge; and Bitry Ochre. They vary in color from an Isabelline yellow, through almost every shade of brown, up to a moderately good red. The finest kinds are used by painters; the coarsest by carpenters for marking out their work, by farmers for marking cattle, etc. OCHREACEOUS, a. *ō-krā'shūs*, of the color of ochre. OCHERY, a. *ō'kér-ī*, or OCHREY, a., or OCHRY, a. *ō'krī*, pert. to or resembling ochre. OCHROITE, n. *ōk'rō-īt*, an impure variety of cerite.

OCHREA, n., properly COREA, n. *ōk'rě-ă* [L. *ocrěă*, a covering to protect the legs]: in *bot.*, a tubular membranous stipule through which the stem seems to pass. OCH'REATE, a. *-ăt*, bearing OCH'REÆ, plu. *-ē*; sheathed after the manner of a boot.

OCH'RO: see HIBISCUS.

OCHROLEUCOUS, a. *ōk'rō-lō'kūs* [Gr. *ōchra*, ochre *leukos*, white]: in *bot.*, a pale ochery color.

OCHTHODROMUS—OCONEE.

OCHTHODROMUS, *ōk-thōd'rō-mūs* [Gr. *ochthos*, bank, rising ground; *dromos*, from root *drom*, running]: genus of Amer. birds, ringed plovers, belonging to the family *Charadriidæ*: they are characterized by their very large bill. The species *O. Wilsonius*, or Wilson's plover, is abundant on the Atlantic and Gulf coasts of the United States s. of Virginia.

OCKHAM, **WILLIAM OF**: see **OCCAM**.

OCKLEY, *ōk'li*, **SIMON**: 1678–1720; b. Exeter, England: Oriental scholar. He studied at Queen's College, Cambridge, receiving the degrees B.A. 1697, M.A. 1701, and B.D. 1710. After becoming a fellow of Jesus College, and vicar of Swavesey 1705, he was appointed prof. of Arabic in the Univ. of Cambridge 1711. He made an exhaustive examination of the Arabic mss. in the Bodleian Library, and compiled therefrom *The History of the Saracens*, which was pub. in two vols., was enthusiastically received by his contemporaries, and long remained the standard history of the people and times of which it treats. Later researches have shown that he depended too much on an author whose imagination had been allowed too free rein. O. had a large and probably extravagant family, and during the later years of his life suffered greatly from poverty. The preface to the second vol. of his *History* was dated at Cambridge Castle, in which he was for some time a prisoner for debt. The story of his financial troubles is told in the *Calamities of Authors*, by D'Israeli. Among his other works were: sermons on *The Christian Priesthood* and *The Necessity of Instructing Children in the Scriptures*; a translation, from the Italian, of *The History of the Present Jews throughout the World*; and a translation of *The Apocryphal Book of Esdras*, from an Arabic version. He died in England.

OCMULGEE, *ōk-mŭl'ghē*: river in Ga., rising in the n. centre of the state by three streams, and, after a course of 200 m. s.s.e., joining the Oconee, to form the Altamaha. It is navigable to Macon, 130 m. above its mouth.

OCONEE, *ō-kō'nē*: river in Ga., rising in the n.e. part of the state, and flowing s. 250 m., to its junction with the Ocmulgee, to form the Altamaha. It is navigable to Milledgeville, 100 m. above its mouth.

O'CONNELL.

O'CONNELL, *o-kōn'nél*, DANIEL: 1775, Aug. 6—1847, May 15; b. near Cahirciveen, co. Kerry, Ireland; eldest son of Morgan O'C. of Darrynane. His family was ancient, but straitened in circumstances, having lost their estates through the severe laws under which the Irish Rom. Catholics had long suffered. O'C. received his first education from a hedge-schoolmaster, and, after further training under a Rom. Cath. priest in co. Cork, was sent 1790 to the English college at St. Omer. His school reputation was very high; but he was driven home prematurely by the outbreak of the Revolution, and 1794 entered as law-student at Lincoln's Inn. In 1798 he was called to the bar; and it was the boast of his later career, as an advocate of the repeal of the union with England, that his first public speech was delivered at a meeting, in Dublin, convened to protest against that projected measure. The Rom. Catholic party having rallied from the prostration into which they had been thrown through the rebellion of 1798 and its consequences, O'C. was drawn into public political life. In all important meetings of his co-religionists, his unquestioned ability soon made him a leader. He was an active member of all the successive associations which, under the various names 'Catholic Board,' 'Catholic Committee,' 'Catholic Association,' etc., were organized to procure the repeal of the civil disabilities of the Rom. Cath. body. Of the Catholic Assoc. he was the originator; and, though his supremacy in its councils was occasionally challenged by some aspiring associates, he continued almost supreme till its dissolution. By means of this association, and the 'Catholic Rent' which it was enabled to raise, he created so formidable an organization throughout Ireland, that it gradually became apparent that the desired measure of relief could not longer be safely withheld; and the crisis was precipitated by the bold expedient adopted by O'C., of procuring himself to be elected member of parliament for Clare 1828, notwithstanding his well-known legal incapacity to serve in parliament, in consequence of his being obliged to refuse the prescribed oaths of abjuration and supremacy, which refusal then was made the ground of the exclusion of Rom. Catholics from the legislature. This decisive step toward the settlement of the question, though it failed to procure for O'C. admission to parliament, led to discussions within the house, and to agitations outside, so formidable, that, in the beginning of 1829, the Duke of Wellington and Sir Robert Peel found it expedient to give way; and, deserting their former party, they introduced and carried through, in the spring of that year, the well-known measure of Rom. Cath. emancipation. O'C. was at once re-elected, and took his seat for Clare, and continued in parliament until his death. He was elected for his native county 1830, for the city of Dublin 1836, for the town of Kilkenny 1836 (having been unseated for Dublin on petition), for Dublin again 1837, and for co. Cork 1841. During all these years, hav-

ing entirely relinquished his practice in his attention to public affairs, he received, by means of an organized annual subsidy, a large yearly income from the voluntary contributions of the people, by whom he was idolized as their 'Liberator;' and who joined with him in all his successive agitations against the act of union, against the Prot. Church establishment, and in favor of reform. In the progress of more than one of these political agitations, his associations were suppressed by the govt.; and the agitation for a repeal of the union, recommenced 1841, and carried on by 'monster meetings' throughout Ireland, at which O'C. himself was the chief speaker, assumed proportions so formidable, that he, with several others, was indicted for a seditious conspiracy, and, after a long and memorable trial, was convicted, and sentenced to a year's imprisonment, with a fine of £2,000. This judgment was reversed by the house of lords, and O'C., on his discharge, resumed his career, but his health had suffered from confinement, and still more from dissensions and opposition in the councils of his party; and as, on the return of the whigs to power 1846, he consented to support their govt., the malcontents of the Repeal Assoc. openly separated from him, and a bitter feud between 'Young' and 'Old' Ireland ensued. In this quarrel, O'C. steadfastly maintained his favorite precept of 'moral force,' and was supported by the great body of the Rom. Cath. bishops and clergy; but his health gave way in the struggle. He was ordered to try a milder climate; and on his journey to Rome, in the spring of 1847, he was suddenly seized with paralysis, and died at Genoa. His eminence as a public speaker, and especially as a master of popular eloquence, is universally admitted. His speeches, unfortunately, were mostly extempore, and exist only in the reports (uncorrected by himself) taken at the time. As a lawyer, he was versed in criminal and constitutional jurisprudence; as a leader, he had profound sagacity and dexterity, with thorough knowledge of the character of his people; he was sincerely devoted to his church and to his race, and believed fully in the justice of the conflict in which he stood forth as champion. He was a fierce radical as concerned human liberty, yet an immovable conservative as concerned ancient tenets. In his advocacy of the Rom. Cath. claims for equal justice, O'C. carried with him the moral sense of the British people: his later agitation for repeal of the union with Britain failed to command general public assent. He published but a single volume, *A Memoir of Ireland, Native and Saxon*, and a few pamphlets; the most important of which, as illustrating his personal history and character, is *A Letter to the Earl of Shrewsbury*.—See *Life and Times of Daniel O'Connell*, by his son, John O'C.; also *Recollections of Daniel O'Connell*, by John O'Neill Daniel; Fagan's *Life of Daniel O'Connell*; and *The Liberator*, by L. F. Cusack (1872).

OCONOMOWOC—OCTA.

OCONOMOWOC, *ō-kō-nō-mo-wōk'*: a city in Waukesha co., Wis.; on the La Crosse division of the Chicago Milwaukee and St. Paul railroad; 31 m. w. of Milwaukee, on Oconomowoc creek. It is surrounded by many beautiful lakes, and has attractive drives, mineral springs, and several excellent hotels, rendering it a pleasant summer resort. It contains 7 churches, 1 bank, a ladies' seminary, 3 newspapers, and a foundry. Pop. (1880) 2,174; (1890) 2,729; (1900) 2,880.

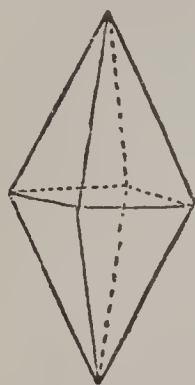
O'CONOR, *o-kōn'ér*, CHARLES, LL.D.: 1804, Jan. 22—1884, May 12; b. New York; son of Thomas O'C. While yet a boy, he commenced studying law, and at the age of 20 was admitted to the bar. By close study and by his great intellectual powers, he quickly gained high rank in his profession. Among the cases which gave him a national fame were the Forrest divorce case, the Slave Jack case 1835, the Lemmon slave case 1856; and the Jumel title suit, in which property to the amount of \$6,000,000 was involved. He was the democratic candidate for lieut.gov. of N. Y. 1848, and, though defeated, received many thousand more votes than any other man on the ticket. During the civil war, he was a strong sympathizer with the south; he was the leading counsel for Jefferson Davis when the latter was under indictment for treason, and was one of the bondsmen when bail was granted. He was one of the leaders in the great suits which resulted in the dispersion of the Tweed 'ring' in New York, and refused compensation for his services in these cases, which extended over several years. Against his wish, he was nominated 1872 for pres. by democrats who were opposed to Horace Greeley; and 1876 he was counsel for Samuel J. Tilden in the electoral contest for the presidency. He removed 1881 to Nantucket, which he made his home until his death.

OCONTO, *ō-kōn'tō*: city, cap. Oconto co., Wis.; at mouth of the Oconto river, on the w. shore of Green Bay; on the Chicago and Northwestern, the Milwaukee Lake Shore and Western, and the Milwaukee and Northern railroads; 30 m. n. of Fort Howard. It has 7 churches, a public library, 3 weekly newspapers, and 2 national banks. There is an organized fire department and a public park. Wagons are manufactured, and there are large planing-mills and foundries. The surrounding country is heavily timbered. Pop. (1870) 2,655; (1880) 4,171; (1885) 4,880; (1890) 5,219; (1900) 5,646.

OCTA, *ōk'tă*, or OCTO, *ōk'tō* [L. *octo*; Gr. *oktō*, eight]: a common prefix, signifying 'eight.'

OCTAGON—OCTAVE.

OCTAGON, n. *ōk lă-gōn* [Gr. *oktō*, eight; *gōnĭă*, a corner or angle]: plane closed figure of eight sides and eight angles. When the sides are equal, and also the angles, the figure is a 'regular octagon;' in this case, each angle is 135° , or equal to three half right angles. If the alternate corners of a regular O. be joined, a square is constructed; and as the angle contained between the sides of the square and of the O. is one-fourth of a right angle, the O. may easily be constructed from the square as a basis. **OCTAGONAL**, a. *ōk-tăg ō-năl*, having eight sides and eight angles.



Octahedron.

OCTAHEDRON, n. *ōk' lă-hē drōn* [Gr. *oktō*, eight; *hēdra*, a seat or place of anything]: one of Plato's five regular solids, being a solid figure bounded by eight triangles, and having twelve edges and six angles. A *regular* O. has its eight triangular faces equilateral, and may, for convenience, be defined as a figure composed of two equal and similar square pyramids, with equilateral triangles for their sides, placed base to base. This solid is symmetrical round any angle. The O. appears in nature as one of the forms of crystals of sulphur. **OCTAHE'DRAL**, a. *-drăl*, having eight equal sides. **OCTAHE'DRITE**, n. *-tă-hē drīt*, in *mineral.*, a term for the pure oxide of titanium occurring in elongated eight-sided crystals.

OCTANDRIA, n. *ōk-tăn' drĭ-ă* [Gr. *oktō*, eight; *aner* or *andra*, a male]: a class of plants having hermaphrodite flowers with eight stamens. **OCTAN'DER**, n. *-dēr*, a plant having eight stamens. **OCTAN'DRIAN**, a. *-drĭ-ăn*, or **OCTAN'DROUS**, a. *-drūs*, having the character of the class octandria; having eight distinct stamens.

OCTANGULAR, a. *ōk-tăng' gū-lēr* [L. *octo*, eight; *an'gulus*, a corner or angle]: having eight angles.

OCTANT, n. *ōk' tănt* [F. *octant*—from L. *octo*, eight]: a nautical instrument, the measuring arc of which is the eighth part of a circle; the eighth part of a circle.

OCTASTYLE, n. *ōk' tă-stĭl* [Gr. *oktō*, eight; *stulos*, a column]: in *arch.*, a temple or other building having eight columns in front.

OCTATEUCH, *ōk' ta-tūk*, or **OCTOTEUCH**, *ōk' tō-tūk* [Gr. *oktō*, eight; *teuchos*, book]: the first 8 books of the Hebrew scriptures.—Genesis to Ruth inclusive.

OCTAVE, n. *ōk' tăv* [F. *octave*—from L. *octāvus*, eighth—from *octo*, eight]: in *music*, the longest interval in the diatonic scale, as from *do* to *do*, or from C to C; the interval between any musical note and its most perfect concord, which is double its pitch, and occupies the position of the eighth note from it on the diatonic scale. The name octave is often given to the eighth note itself, as well as to the interval. There is between a note and its octave a far closer relation than between any other two notes; they go together almost as one musical sound. In combination, they are hardly distinguishable

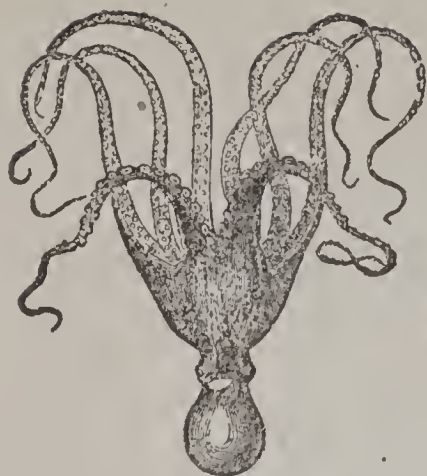
OCTAVIA—OCTILE.

from one another, and their harmonics agree invariably—a coincidence which occurs in the case of no other interval. O., on the *pianoforte*, a harmonic interval of five tones and two semitones. O. is also a name for a small cask for wine, being the eighth part of a pipe. In the calendar, O. signifies eight days, or the eighth day, after a church festival, the festival being included: ADJ. consisting of eight. OCTAVO, a. n. *ők-tā'vō* [Sp. *octāvo*; It. *ottavo*, the eighth part—from L. *octāvus*]: having eight leaves to the sheet—applied to the size of a book; applied to one leaf of a sheet of printing-paper folded so as to make eight leaves—usually written 8vo: see BOOK: PAPER.

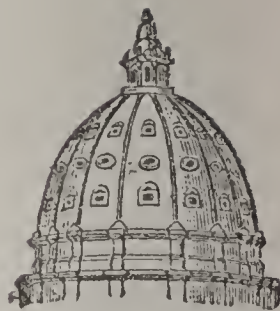
OCTAVIA, *ők-tā'vī-a*: daughter of Caius Octavius, Roman pretor B.C. 61; sister of Emperor Augustus, and wife of Mark Antony; d. B.C. 11. She was distinguished for beauty, noble disposition, and all womanly virtues. Her first husband was C. Marcellus, to whom she was married B.C. 50. He died B.C. 41; and, shortly afterward, she consented to marry Antony, to make secure the reconciliation between him and her brother. The event was hailed with joy by all classes. In a few years, Antony became tired of his gentle and noble spouse, and forsook her, returning to his old love for Cleopatra. When the Parthian war broke out, O. wanted to accompany her husband, and actually went as far as Corcyra, whence Antony sent her home, that she might not interrupt his guilty relation with the Egyptian queen. B.C. 35, O. made an effort to rescue him from a degradation which was even endangering the success of the Roman arms, and sailed from Italy with reënforcements of troops and supplies of money; but a message reached her at Athens, ordering her to return to Rome. She proudly obeyed; but, with a magnanimity that recalls the Roman character in earlier and better days, she forwarded the supports to her husband. Her brother Octavian, indignant at the insult to her, would have had her quit her husband's house, and come and live with him; but she refused. B.C. 32, war, long inevitable, broke out between Antony and Octavian; and Antony crowned his insults by sending O. a bill of divorcement. But no injury could overcome the magnanimity of this strong and gentle soul; and, after her husband's death, she brought up with maternal care not only her own children, but also Antony's children by Cleopatra. She died at Rome, and was buried with the highest honors by the state.—Another OCTAVIA, daughter of Emperor Claudius, was wife of Emperor Nero.

OCTENNIAL, a. *ők-těn'nī-āl* [L. *octo*, eight; *annus*, a year]: happening every eighth year; lasting eight years. OCTEN'NIALY, ad. -ly.

OCTILE, n. *ők'tīl* [L. *octo*, eight]: an *octant*.



Octopus Vulgaris (Common Cuttle).



Œil de Bœuf.



Operculum of Shell.—*a*, *Turbo olearnus*; *o*, Operculum, outside; *h*, Operculum, inner side; *b*, Concentric operculum (*Ampullaria*); *c*, Imbricated or lamellar (*Purpura*); *d*, Multispiral (*Trochus*); *e*, Unguiculate or claw shaped (*Fusus*); *f*, Subspiral (*Melania*); *g*, Articulated (*Nerita*); *h*, Paucispiral (*Turbo*).



Ogham Inscription from a Stone found near Ennis.



Operculum of Fish.—Head of Perch: *a*, Operculum; *b*, Sub-operculum; *c*, Pre-operculum; *d*, Inter-operculum.



Operculum of Moss.



Opposite Leaves.—*Veronica Chamædrys*.

OCTILLION—OCTOROON.

OCTILLION, n. *ōk-til'yŭn* [L. *octo*, eight, and Eng. *million*]: a number produced by raising a million to the eighth power; in Eng. system of notation, 1 followed by 48 ciphers; in the F. and It. systems, a million multiplied by the eighth power of a thousand—1 followed by 27 ciphers.

OCTOBER, n. *ōk-tō'bēr* [L. *October*, October—from *octo*, eight]: eighth month of the so-called 'year of Romulus;' but became the tenth month, as it is with us, when (according to tradition) Numa changed the commencement of the year to Jan. 1. It has 31 days. O. preserved its ancient name notwithstanding the attempts made by the Roman senate, and the Emperors Commodus and Domitian, who substituted for a time the terms Faustinus, Invictus, Domitianus. Many Roman and Greek festivals occurred in this month, the most remarkable of which was the sacrifice at Rome of a horse (which was called *October*) to the god Mars. The other festivals were chiefly bacchanalian. Among the Saxons, O. was styled *Wyn moneth*, or the wine month.

OCTODECIMAL, a. *ōk'tō-dēs'ī-māl* [L. *octo*, eight; *decem*, ten]: a term designating a crystal whose middle part has eight faces and two summits, together ten.

OCTODECIMO, a. or n. *ōk'tō-dēs'ī-mō* [L. *octo*, eight; *decem*, ten]: consisting of 18 leaves to a sheet; one leaf of a sheet of printing-paper folded 18 times; applied to the size of a book—usually written 18mo: see under **PAPER**.

OCTODENTATE, a. *ōk'tō-dēn'tāt* [L. *octo*, eight; *dentātus*, toothed]: having eight teeth.

OCTOFID, a. *ōk'tō-fid* [L. *octo*, eight; *findo*, I cleave; *fidī*, I cleft]: cleft or separated into eight segments, as a calyx.

OCTOGENARIAN, n. *ōk'tō-jě-nā'rī-ān* [F. *octogénaire*—from L. *octogenāriūs*, of eighty—from *octogēnī*, eighty each—from *octo*, eight: Sp. *octogenario*]: one who is eighty years old: **ADJ.** also **OCTOGENARY**, a. *ōk-tōj'ēn-ēr-ī*, of eighty years of age. **OCTOG'ENARY**, n. an instrument of eight strings.

OCTOGYNOUS, a. *ōk-tōj'ī-nūs* [Gr. *oktō*, eight; *gunē*, a woman]: having eight pistils or styles.

OCTOPOD, n. *ōk'tō-pōd* [Gr. *oktō*, eight; *pous* or *poda*, a foot]: a crustacean or mollusk having eight feet or legs. **OCTOPODA**, n. plu. *ōk-tōp'ō-dā*, or **OCTOPODS**, n. plu. *ōk'tō-pōdz*, cuttle-fishes with eight arms attached to the head; a section of dibranchiate cephalopods (see **CEPHALOPODA**), having the body, in general, very short, the head very distinct; eight arms, not very unequal, furnished with simple suckers; with or without shelly covering. To this section belong Argonauts, Poulpes, etc. **OCTOPUS**, n. *ōk'tō-pūs*, an octopod, devil-fish, or poulpe (see **POULPE**). **OCTOPI**, n. plu. *ōk'tō-pī*, or **OCTOPUSES**, n. plu. *-pūs-ēs*.

OCTOROON, n. *ōk'tō-rōn* [L. *octo*, eight]: the offspring of a quadroon and a white person.

OCTOSTYLE-OCULIFORM.

OCTOSTYLE, *ōk'tō-stīl*: in classic architecture, a portico composed of eight columns in front.

OCTOSYLLABLE, n. *ōk'tō-sīl' lă-bl* [L. *octo*, eight; *syllabă*, a syllable]: a word consisting of eight syllables. **OC'TOSYLLAB'IC**, a. *-lăb' īk*, consisting of eight syllables.

OCTROI, n. *ōk'trwâ* [F. *octroi*, a grant, a city toll—from *octroyer*, to grant—from mid. L. *auctorîcārē*—from L. *auctorārē*, to procure, then to grant; L. *auctoritas*, authority]: tax levied at the gates of a city on articles brought into it. O. meant originally any ordinance authorized by the sovereign, and thence came to be restrictively applied to a toll or tax in kind levied from a very early period, in France and other countries of n. Europe, on articles of food which passed the barrier or entrance of a town. The right to levy this toll was often delegated to subjects; and to increase its amount, a device was resorted to of raising the weight of the pound in which the O. was taken. The large pound, an ounce heavier than that in ordinary use, was called the *livre d'octroi*, whence the expression *pound troy*. The O. came eventually to be levied in money, and was abolished in France at the Revolution. In 1798 it was re-established, under pretext that it was required for purposes of charity, and called the *octroi de bienfaisance*; and it was reorganized 1816, 42, and 52. Of the O. duty at present levied at the gates of French towns, one-tenth goes to the national treasury, the rest to local expenses. The O. officers are entitled to search all carriages and individuals entering the gates of a town. From the octrois of Paris, government derived, a few years ago, a revenue of 56 million francs, about \$10,800,000. In 1860 the Belgian govt. acquired popularity by abolishing the octroi.

The epithet *octroyé* is applied by continental politicians to a constitution granted by a prince, in distinction from one which is the result of a paction between the sovereign and the representatives of the people. Any public company possessing an authorized monopoly like that held by the E. India Company is said to be *octroyé*.

OCTUPLE, a. *ōk'tū-pl* [L. *oc'tuplus*, eightfold—from *octo*, eight; *plico*, I fold]: eightfold. **OC'TUPLET**, n. *ōk'tū-plēt*, in *mus.*, group of eight notes which are to be played in the time of six.

OCULAR, a. *ōk'ū-lēr* [L. *oculārius*—from *oc'ulus*, an eye]: pert. to the eye; depending on or known by the eye; received by actual view. **OC'ULARLY**, ad. *-lī*. **OCULATE**, a. *ōk'ū-lāt*, furnished with eyes; having spots somewhat like eyes. **OCULIST**, n. *ōk'ū-līst*, a surgeon who practices only on diseases of the eye. **OCULUS**, n. *ōk'ū-lūs*, in *bot.*, an eye; a leaf-bud. **OCULAR DEMONSTRATION**, a proof self-evident to the eyesight.

OCULIFORM, a. *ō-kū'lī-fawrm* [L. *oc'ulus*, an eye; *forma*, shape]: eye-shaped.

OCULINA—OD.

OCULINA, n. *ōk'ū-tī'nā* [L. *oc'ulus*, an eye]: a class of strong branching corals, thus called from the eyelike or starlike polyp-cells which stud their branches.

OCULO-, pref. *ōk-ū-lō-*: of or belonging to or moving the eye.

OCYDROME, n. *ōs'ī-drōm* [Gr. *okus*, swift, and root *drom*, running]: bird of genus *Ocydromus*, fam. *Rallidæ*; the species are confined to New Zealand; in all, the wings are too short for flight; and the birds are swift-footed, as the name indicates.

OCYPODA, n. *ō-sīp'ō-dâ* [Gr. *okus*, swift, and root *pod*, foot]: typical genus of fam. *Ocypodidæ*: sand-crab. OCYPODIDÆ, *ō-sī-pod'ī-dē*, fam. of crustaceans comprising the sand-crabs or racing-crabs.

OD, n. *ōd* [said by some to be from Gr. *hodos*, a way, a passage; by others said to be from the same root as *Odin*, and supposed to mean all-pervading]: name arbitrarily given by Baron von Reichenbach (q.v.) to a peculiar physical force which he thought that he had discovered. This force, according to him, pervades all nature, and manifests itself as a flickering flame or luminous appearance at the poles of magnets, at the poles of crystals, and wherever chemical action is going on. This would account for the luminous figures said to be sometimes seen over recent graves. It is thought that this force produces the phenomena of mesmerism or animal magnetism. The od-force has positive and negative poles, like magnetism. The human body is od-positive on the one side, and od-negative on the other. Certain persons, called 'sensitives,' can see the odic radiation like a luminous vapor in the dark, and can feel it by the touch like a breath. In the fact, as assumed, that the meeting of like odic poles causes a disagreeable sensation, while the pairing of unlike poles causes a pleasant sensation, it is claimed that a sufficient cause is found for those likings and antipathies hitherto held unaccountable. Some sensitive persons cannot sleep on their left side (in the n. hemisphere), because the n. pole of the earth, which is od-negative, affects unpleasantly the od-negative left side. All motion generates od; why, then, may not a stream running underground affect a sensitive water-finder, so that the divining-rod in his or her hand shall move without, it may be, any conscious will? All the phenomena of mesmerism are ascribed to the workings of this od-force. Reichenbach does not pretend to have had the evidence of his own senses for any of the manifestations of his assumed od-force; the whole theory rests on revelations made to him by 'sensitives.' The theory has no basis in science. For details, see Reichenbach's large work, transl. by Dr. Ashburner, *The Dynamics of Magnetism*; or his *Odisch-Magnetische Briefe*; also *Transactions of the Psychical Research Society* (1883). ODIC, *ō'dīk* or *ōd'īk*, pertaining to the od-force. *Odyl*, *Odyle*, *Odylie force*, are other names for Od.

OD. or 'Od, or ODD: euphemism for the name *God*; formerly used as an interjectional oath.

ODAL, *ō'dal*: same as UDAL (q.v.).

ODAL, *ōd'al* [Ind. *adu!*]: climbing shrub, native of India: *Sarcostigma kleinii*. An oil expressed from the seeds is used in the treatment of rheumatism, and is also burned in lamps.

ODALISQUE, n. *ō'dă-lisk* [F. *odalisque*—from Turk. *odalik*, a chamber companion—from *odah*, a chamber]: in *Turkey*, one of the female slaves in the sultan's harem.

ODAL, *ō'dal* (or UDAL, *ū'dal*), RIGHT [Celtic *od*, property]: a tenure of land which was absolute, and not dependent on a superior, which prevailed throughout n. Europe before the rise of feudalism. It was founded on the tie of blood which connected freeman with freeman, and not on the tie of service. It was the policy of the sovereign authority everywhere to make it advantageous for the freemen to exchange the odal tie for the tie of service—a change which paved the way for the feudal system. The odallers of Orkney were allowed to retain or resume their ancient privileges on paying a large contribution to the erection of St. Magnus's Cathedral at Kirkwall; and the odal tenure prevails to this day in the Orkney and Shetland Islands, the right to land being completed without writing, by undisturbed possession proved by witnesses before an inquest.

ODD, a. *ōd* [Norw. *odde*, odd—from *oddr*, a point: Dan. *odde*; Sw. *udde*, a point—*lit.*, a point or object sticking up for want of another to match it: Icel. *oddi*, a triangle, a point of land]: not even; left over after some definite or even number; not taken into the common account; uncommon; strange; eccentric; droll; unmatched; in *OE.*, outlying; unheeded; unlucky. ODD'LY, ad. *-lī*, in an odd manner; strangely; unaccountably. ODD'NESS, n. *-nēs*, state of being not even; singularity; uncouthness. ODDITY, n. *ōd'ī-tī*, a singular person or thing; singularity; queerness. ODD-LOOKING, a. having a singular look. ODD NUMBER, any number which leaves a remainder on being divided by two. ODDS, n. plu. *ōdz*, difference in favor of one against another; more than an even wager; more likely than the contrary; advantage; superiority; in *OE.*, dispute; variance; quarrel. AT ODDS, at variance. ODDS AND ENDS [properly *orts* and ends (see ORT)]: scraps; fragments; remnants. *Note.*—Skeat says ODDS AND ENDS means 'points and ends.' As stated in the text, however, *odds* is an easy corruption of *orts*.—SYN. of 'odd': uneven; quaint; comical; queer; singular; unusual; whimsical; extraordinary; fantastical; particular; uncouth; unaccountable; unlikely.

ODD FELLOWS.

ODD FELLOWS, *ôd' fêl lôz*, INDEPENDENT ORDER OF: one of the most extensive self-governed beneficial associations in the world; organized in Manchester, England, 1812, though isolated 'lodges' had existed in various places for some time previously—the oldest whose name has been preserved being the 'Loyal Arnstaricus, No. 9,' which met 1745 in London; though in De Foe is an earlier mention of the 'Society of Odd Fellows.' These lodges were generally secret fraternities, humble imitations of Freemasonry—adopting a similar system of initiatory rites, phraseology, and organization—instituted for social and convivial purposes, and only occasionally extending charitable assistance to members. On its organization in Manchester as 'The Manchester Unity,' the main purpose of Odd-fellowship was declared by its laws to be 'to render assistance to every brother who may apply through sickness, distress, or otherwise, if he be well attached to the queen and government, and faithful to the order;' and in Great Britain this continues the basis of all its operations. It retains some of the characteristics of Freemasonry, in possessing passwords and peculiar 'grips,' whereby members can recognize one another. The headquarters for Britain are at Manchester, where the grand master and board of directors meet quarterly to hear appeals and transact the general business of the order. This body of Odd Fellows, generally spoken of as 'The Manchester Unity,' has established lodges in England, Scotland, Wales, Ireland, France, Turkey, Africa, N. and S. America, E. and W. Indies, and Australasia. 1889, Jan. 1, its reports showed net increase of members in preceding year 10,758, adult members 638,352, juvenile 50,140, total membership 688,492; receipts (1887, 1888 not complete) \$4,528,331, sick and funeral benefits paid (1887) \$3,333,184, and invested funds (1888, Jan. 1) \$34,033,684. The early lodges of Odd Fellows organized in the United States (about 1806) soon became extinct, and no permanent branch of the English order was established till 1819, Apr. 26, when Thomas Wilkey and four companions, former members of English lodges, organized Washington Lodge, No. 1, in Baltimore. In the following year, by authority of the Manchester Unity, this body was invested with grand and subordinate lodge prerogatives, and took the title 'No. 1, Washington Lodge, the Grand Lodge of Maryland and of the U. S. of America.' An independent charter was obtained from the English body 1826, and a complete separation of the American and English Odd Fellows was consummated 1843. Since then what is known as American Odd-fellowship has been established in Australasia, Chili, Cuba, Denmark, France, Germany, Japan, Mexico, the Netherlands, Norway, Peru, Sandwich Islands, Sweden, and Switzerland; and the supreme American body now bears the title of 'The Sovereign Grand Lodge, I. O. O. F.' Under its jurisdiction (1889, Jan. 1) were 2 independent grand lodges (Germany and Australasia), 64 grand lodges, 8,794 subordinate lodges, 48 grand encampments, 2,091 subor-

ODE—ODENKIRCHEN.

dinate encampments, 693,537 lodge members, 106,972 encampment members, 47 Patriarchs Militant (uniformed rank) depts., 546 component cantons, 22,000 chevaliers, 1,763 Rebekah Degree lodges (for 3d-degree members and their wives, daughters over 18 years of age, and widows), 96,436 R. D. lodge members. The aggregate revenue of lodges and encampments (1888) was \$6,567,519; aggregate relief \$2,580,971; total membership, male and female, 652,787; total receipts (1830-1889) \$127,803,298, relief \$48,601,862, initiations in subordinate lodges 1,575,637; white Odd Fellows in the world 1889, Jan. 1: Independent Order 652,787, Manchester Unity 688,492—total 1,341,279. The total relief paid by the I. O. O. F. in 1901 was \$4,106,173; brothers relieved, 122,276; widowed families relieved, 5,659; paid for relief of brothers, \$3,090,271; for widowed families, \$147,291; education of orphans, \$86,818; burying the dead, \$781,792.

ODE, n. *ōd* [Gr. *ōdē*, a song or ode—from *aeidein*, to sing: It. *oda*: F. *ode*]: short poem of unequal measures, confined to the expression of sentiment or imaginative thought, admitting narrative only incidentally, and longer and more varied than the song or ballad; a lyric poem. Ode meant originally any lyrical piece adapted to be sung. In modern use of the word odes are distinguished from songs by not being necessarily in a form to be sung, and by embodying loftier conceptions and more intense and passionate emotions. The language of the ode is therefore abrupt, concise, and energetic; and the highest art of the poet is called into requisition in adapting the meters and cadences to the varying thoughts and emotions—hence the changes of meter and versification in many odes. The rapt state of inspiration that gives birth to the ode leads the poet to conceive all nature as animated and conscious, and, instead of speaking *about* persons and objects, to address them as present. See Gosse's *English Odes* (1881).

Among the highest examples of the ode are the *Song of Moses* and several of the Psalms. Dryden's *Alexander's Feast* is reckoned one of the best odes in the English language. Additional specimens are: Gray's *Bard*, Collins's *Ode to the Passions*, Burns's *Scots wha ha'e*, Coleridge's *Ode to the Departing Year* and *Dejection*, Shelley's *Ode to the Skylark*, and Wordsworth's *Ode on the Recollections of Immortality in Childhood*.

ODENKIRCHEN, *ō'dén-kīrch-én*: town of Rhenish Prussia, 15 m. w.s.w. from Düsseldorf, near the right bank of the Niers. It has manufactures of velvets, paper, leather, etc., and, like many other manufacturing towns in the same district, has recently increased in size and population. Pop. (1875) 7,048; (1880) 8,778; (1890) 11,667; (1895) 12,832.

ODENSE—ODER.

ODENSE, *ō dēn-sēh*, anc. Odin's-Ey, or Odin's Oe (i.e., Odin's Island): chief town of the Danish Island of Fünen, and oldest city in the kingdom; in the amt or dist. of O.; 55° 25' n. lat., and 10° 20' e. long. O. is the seat of the gov. of the island and the see of a bishop; has a gymnasium and several literary societies, and is an active, thriving provincial town. A bishopric was founded here 988, prior to which time O. bore the reputation of being the first city established by Odin and his followers. The cathedral, founded 1086 by St. Knud, whose remains, with those of several early Danish kings, were deposited here, is a fine specimen of the early simple Gothic style. The lay convent or college for ladies contains an extensive library, furnished with copies of all printed Danish works. At O. a diet was held 1527, in which the Reformed or Lutheran doctrines were declared the established creed of Denmark, and equality of rights was granted to Protestants. A diet there 1539 promulgated the laws regulating the affairs of the Reformed Church. Pop. (1890) 30,277; (1901) 40,138.

O'DENWALD: see HESSE-DARMSTADT.

ODEON, n. *ō-dē'ōn*, or **ODE'UM**, n. *-ūm* [L. *odēūm*; Gr. *ōdeion*, a music-room—from Gr. *ōdē*, a song]: in anc. Greece, a musical theatre, smaller than the theatre and roofed, in which anc. poets and musicians contended for prizes. Sparta had the first, B.C. 7th c.: later every large Greek city had one (Athens had three—one seating 8,000 people). Domitius introduced the O. into Rome.

ODER, *ō'dér* (Lat. *Viadrus*, Slavon. *Vjodr*): one of the principal rivers of Germany, rising in the Leselberg on the table-land of Moravia, more than one thousand ft. above sea-level and entering Prussian Silesia at Odersberg, after a course of about 60 m. After traversing Brandenburg in a n.w. direction, it crosses Pomerania, and empties into the Stettiner Haff, whence it passes into the Baltic by the triple arms of the Dievenow, Peene, and Swine, which inclose the islands of Wollin and Usedom. The O. has a course of more than 500 m., and a river-basin of 50,000 sq.m. The rapid flow of this river, induced by its very considerable fall, is accelerated by the affluence of several important mountain streams, and thus contributes, together with the silting at the embouchures of these streams, to render the navigation difficult; great expense and labor being, moreover, necessary to keep the embankments in order, and to prevent the overflowing of the river. The O. has numerous secondary streams, the most important of which are the Oppa, Neisse, Ohlau, Klodnitz, Bartsch, Warthe, and the Ihna; and is connected with the Havel and thence with the Elbe by the Finow canal, and with the Spree by the Friedrich-Wilhelms canal. The chief trading port of the O. is Swinemunde, an important centre for transfer of colonial and other foreign goods to n. Germany and Poland. At Ratibor, 17 m. below Oderberg, the river becomes navigable and is more than 100 ft. in breadth; at Oppeln, in Prussian Silesia, it has a breadth of 238 ft. As a boundary river, it is of military importance and is well defended by the fortresses of Kosel, Grossglogau, Küstrin, and Stettin.

ODESSA.

ODESSA, *ō-dēs'sa*: important seaport and commercial city of s. Russia, govt. of Kherson, on an acclivity sloping to the shore, on the n.w. coast of the Black Sea, 32 m. n.e. of the mouth of the Dniester; lat. $46^{\circ} 29'$ n., long. $30^{\circ} 44'$ e. The harbor is formed by two large moles defended by strong works, and is capable of containing 200 vessels. The bay is deep enough even close in shore to admit the largest men-of-war: it is frozen for a few days in severe winters. The promenade along the face of the cliff, descending to the shore by a broad stone stair of 204 steps, is the favorite walk of the inhabitants. Here also stands the monument of the Duc de Richelieu, to whom in great part the town is indebted for its prosperity. In the pedestal of the monument is preserved the ball by which he was shot during the bombardment of the town by the allied fleet 1854. The University of O., founded 1865, had (1877) 43 professors and 252 students; and the library more than 150,000 vols. The city contains many fine edifices, e.g., the Cathedral of St. Nicholas, the Admiralty, the Custom-house, etc. Owing to the intensity of the heat in summer (rising occasionally to 120°), and the dryness of the soil, vegetation in the vicinity is very poor. In the neighborhood are quarries of the soft stone used for building purposes in O., and in the surrounding towns. One of the great deficiencies of O. formerly was the lack of good water; but works for securing ample supply from the Dniester were completed 1873. Gas was used in O. first in 1861. A railway, opened 1872, has added greatly to the commercial success and importance of O., as it connects it, and of course Kherson, with the governments n. and e. of it in Russia. Tramways have been laid, and new quays and custom-houses erected on ground reclaimed from the sea. The estimated value of the various quantities of grain, wool, hides, tallow, and other articles of export for 1879 (the best year for more than 20 years) was £8,140,480 (\$39,552,700), the number of vessels which entered the port in the same year was 1,471, of which 552 were English. O. is now also an important manufacturing town, tobacco, candles, ropes, and cast-iron goods being among the more notable products. Between 1870 and 1880, the annual value of manufactures was about £2,300,000 (\$11,178,000). Pop. of O. (1814) 25,000; (1850) 100,000; (1884) 225,000; (1890) 313,687; (1897) 405,041.

In ancient times, O. (Gr. *Odessus*) was inhabited by a Greek colony, and later by Tartar tribes. In the beginning of the 15th c., the Turks constructed a fortress here, which was taken by the Russians 1789. In 1793, a Russian fortress was built here, and became the nucleus of a town and port, which two years later received the name Odessa. The Duc de Richelieu, a French emigrant in the Russian service, was appointed gov. here 1803, and during the 11 years of his wise administration, the town prospered rapidly. Since 1823, the city has formed part of the general governorship of s. Russia; is the seat of its administration, and the residence of the gov.gen. and of an abp. The advantageous commercial position of the city, and the privileges granted by government, but chiefly the privileges of a free port

ODEYPOOR—ODIN.

1817-58 (in place of which it now receives an annual subsidy), have developed this city from a mere Turkish fortress into the chief commercial town of the Russian empire after St. Petersburg and Riga. On the outbreak of the Crimean war, 1854, a British steamer went to O. to bring away the British consul, and was fired upon by the batteries of the city. Twelve English war-steamers attacked O., and in a few hours destroyed the fortifications and took a number of Russian vessels.

ODEYPOOR, *ô-dâ-pôr'*, or OODYPORE, *ô-dî-pôr'*, or UDAIPUR, *ô-di-pôr'*: territory in India; a Rajpoot state, called also Meywar; area, 12,600 sq. m. The cap., Oodeypur, stands on one of the most picturesque sites in India, and has a noble palace; pop. about 35,000. Pop. of state (1901) 1,030,212.—Several terri. in India have the same name: among these is a tributary state in Chota Nagpore, 1,000 sq. m.; pop. 30,000. Chota O. is a tributary state in Gujerat; 650 sq. m.; pop. 70,000.

ODGER, *ôj'ér*, GEORGE: labor reformer: 1820-77; b. near Plymouth, England. At a very early age he was taken from school to learn the trade of shoemaker, but continued his studies without a teacher, and attracted considerable attention as a public reader and a politician. Removing to London he joined the Soc. of Cordwainers, and 1859 came into notice as a labor reformer. He was sec. of the London Trades Council 1863, was one of the leaders of the Reform League, and was twice an unsuccessful candidate for a seat in the house of commons. Several members of parliament attended his funeral and provision was made for his widow by a public subscription.

OD'IC FORCE: see Od.

ODIN, *ô'dîn*: Scandinavian deity; called *Woden* among the ANGLO-SAXONS, whence the fourth day of the week is called *Wednesday*. O. is the chief god of Northern Mythology. According to the sagas, O. and his brothers, Vile and Ve, sons of *Boer*, or the first-born, slew Ymer or Chaos, and from his body created the world, converting his flesh into dry land; his blood, which at first occasioned a flood, into the sea; his bones into mountains; his skull into the vault of heaven; and his brows into the spot known as *Midgaard*, the middle part of the earth, intended for the habitation of the sons of men. O., as the highest of the gods, the *Alfader*, rules heaven and earth, and is omniscient. As ruler of heaven, his seat is Valaskjalf, from whence his two black ravens, Huginn (Thought) and Muninn (Memory), fly daily forth to gather tidings of all that is being done throughout the world. As god of war, he holds his court in Valhalla, whither come all brave warriors after death to revel in the tumultuous joys in which they took most pleasure while on earth. His greatest treasures are his eight-footed steed Sleipner, his spear Gungner, and his ring Draupner. As the concentration and source of all greatness, excellence, and activity, O. bears numerous different names. By drinking from Mimir's fountain, he became the wisest of gods and men, but he purchased the distinction at the cost

ODIOUS.

of one eye. He is the greatest of sorcerers, and imparts a knowledge of his wondrous arts to his favorites. Frigga is his queen, mother of Baldur, the Scandinavian Apollo; but he has other wives and favorites, and a numerous progeny of sons and daughters. Although the worship of O. extended over all the Scandinavian lands, it found its most zealous followers in Denmark, where, in the vulgar superstition, he still rides abroad as the wild huntsman, rushing over land and water in the storm beaten skies of winter.

The historical interpretation of this myth, as given by Snorre Sturleson, compiler of the *Heimskringla*, or Chronicles of the Kings of Norway prior to the introduction of Christianity, and followed in recent times by the historian Suhm, is, that O. was a chief of the *Æsir*, a Scythian tribe, who, fleeing before the ruthless aggressions of the Romans, passed through Germany to Scandinavia, where, by their noble appearance, superior prowess, and higher intelligence, they easily vanquished the inferior races of those lands, and persuaded them that they were of godlike origin. According to one tradition, O. conquered the country of the Saxons on his way; and leaving one of his sons to rule there, and introduce a new religion, in which he, as the chief god Wuotan, received divine honors, advanced on his victorious course, and making himself master of Denmark, placed another son, Skjold, to reign over the land, from whom descended the royal dynasty of the Skjoldingar. He next entered Sweden, where the king, Gylfi, accepted his new religion, and with the whole nation worshipped him as a divinity, and received his son Yugni as their supreme lord and high-priest, from whom descended the royal race of the Yuglingars, who long reigned in Sweden. In like manner he founded, through his son Sœming, a new dynasty in Norway; and besides these, many sovereign families of n. Germany, including the Saxon princes of Britain, traced their descent to Odín. As it has been found impossible to refer to one individual all the mythical and historical elements which group themselves around the name of O., Wodin, or Wuotan, it has been suggested by Suhm and other historians, that there may have been two or three ancient northern heroes of the name; but the origin and native country of the assumed O., his date and all that relates to him remains shrouded in complete obscurity. It is probable, however, that the myth of O. originated in nature-worship. See SCANDINAVIAN MYTHOLOGY.

ODIOUS, a. *ô'dĩ-űs* [L. *odĩosűs*, hateful to one, odious—from *odĩum*, hatred, ill-will—from *odĩ*, I hate: It. *odioso*: F. *odieux*]: hateful; detestable; deserving or causing hate; disgusting; a word expressive of strong disapprobation, or simply of disgust. ODIOUSLY, ad. -*űlly*. ODIOUSNESS, n. -*űness*, the quality of being odious. ODIUM, n. *ô'dĩ-űm*, hatred. ODIUM THEOLOGICUM, *thě'ô' lűj' i' kűm* [L. theological hatred]: the hatred peculiar to persons contending in theological disputes, or to persons belonging to different sects.—SYN. of 'odious': abominable; loathsome; repulsive; unpopular; forbidding; invidious;—of 'odium': hatred; dislike; offensiveness; abhorrence; detestation; antipathy.

ODOACER.

ODOACER, *ōd-o-ā'sēr* or *ō-dō'ā-sēr* (also ODOVACER, ODOBAGAR, ODOVACHAR, OTACHAR, etc., and, according to St. Martin, the same as OTTOCHAR, a name frequent in Germany during the middle ages): about 434-493: ruler of Italy 476-493; son of Edecon, a secretary of Attila, and one of his ambassadors to the court of Constantinople. This Edecon was also captain of the Scyrri, who formed the bodyguard of the king of the Huns. After the death of Attila, he remained faithful to the family of his master, but perished about 463 in an unequal struggle with the Ostrogoths. He left two sons, Onulf and Odoacer, the former of whom went to seek his fortune in the East; while O., after leading for some time the life of a bandit chief among the Noric Alps, determined to proceed to Italy, whither barbarian adventurers were flocking from all Europe. According to a monkish legend, a pious hermit, St. Severinus, whom he went to visit before his departure, prophesied his future greatness. O. entered the military service of the Western Roman Empire, and rapidly rose to eminence. He took part in the revolution by which Orestes (475) drove Emperor Julius Nepos from the throne, and conferred on his son Romulus the title of Augustus, which the people scoffingly changed into Augustulus. He soon perceived the weakness of the new ruler, and resolved to profit by it. He had little difficulty in persuading the barbarian soldiery, who had effected the revolution, that Italy belonged to them, and in their name demanded of Orestes the third part of the land, as the reward of their help. This Orestes refused; and O., at the head of his Herulians, Rugians, Turcilingians, and Scyrri, marched against Pavia, which Orestes had garrisoned, stormed the city, and put his opponent to death (476). Romulus abdicated, and withdrew into obscurity. What became of him, is not known. Thus perished the Roman empire. O. was a wise, moderate, and politic ruler, quite unlike our general notion of a barbarian. In order not to offend the Byzantine emperor Zeno, he took the title of king only, and caused the senate to dispatch to Constantinople a flattering letter, in which it declared one emperor to be enough for both East and West; renounced its right of appointing the emperors, expressed its confidence in the civil and military talents of O., and begged Zeno to confer on him the administration of Italy. After some hesitation, the Byzantine emperor yielded to the entreaties of the senate, and O. received the title *Patricius*. He fixed his residence at Ravenna. According to his promise, he divided among his companions the third part of the land of Italy—a measure far less unjust than at first sight may seem, for the peninsula was then almost depopulated, and many domains were lying waste and ownerless. This barbarian ruler did everything in his power to lift Italy out of the deplorable condition into which she had sunk, and to breathe fresh life into her municipal institutions—those venerable relics of nobler days. He even re-established the consulate, which was held by 11 of the most illustrious senators in succession, maintained peace throughout the peninsula, overawed the Gauls and Germans, and recon-

ODOMETER—O'DONNELL.

quered Dalmatia and Noricum. In religion, though an Arian himself, he acted with a kingly impartiality that more orthodox monarchs have rarely exhibited. Gibbon remarks, with his usual pointed sarcasm, that the *silence* of the Catholics attests the toleration which they enjoyed. The valor, wisdom, and success of O. appear to have excited the jealousy and alarm of Zeno, who encouraged Theodoric, King of the Ostrogoths, a still greater warrior and sovereign than O. himself, to undertake an expedition against Italy. The first battle was fought on the banks of the Isontius (mod. *Isonzo*) 489, Aug. 28. O. was beaten, and retreated. During his retreat, he hazarded another battle at Verona, and was again beaten. He then hastened to Rome, to rouse the inhabitants, but the gates of the city were closed against him. Returning northward to his capital, Ravenna, he reassembled the wrecks of his army, and in 490 once more marched against the Ostrogoths, whose advance-guard he defeated, and pursued to the walls of Pavia. In another great battle on the banks of the Adda, O. was vanquished the third time. He then shut himself up in Ravenna, where Theodoric besieged him three years. O. capitulated, on condition that the kingdom of Italy should be shared between him and Theodoric. This agreement was solemnly sworn to by both parties, 493, Feb. 27; but on Mar. 5 O. was assassinated at a feast, either by Theodoric himself or by his command.

ODOMETER, n. *ō-dŏ-mĕ-tĕr* [Gr. *hodos*, a way; *metrōn*, a measure]: instrument attached to a carriage or other vehicle, for registering the distance that it has travelled. Such machines have been in use from an early period, and one is described by Vitruvius in that part of his work *De Architectura* which treats of machines. The instrument, as commonly employed, consists of a train of wheel-work, which communicates motion from the axle of the carriage wheel to an index which moves round the circumference of a dial fixed in one side of the carriage over the axle. The wheel-work is arranged so as to produce a great diminution of the velocity impressed by the axle of the vehicle, and the dial is so graduated that the index can show the number of miles, furlongs, yards, etc., traversed. The instrument is constructed also to work independently, being in this case provided with wheels and an axle of its own; when this is done, the wheel is made of such a size that its circumference is an aliquot part of a mile, an arrangement which greatly simplifies the calculation of the distance traversed. The complete O. can then be drawn along by a man on foot or attached behind a carriage. See **PEDOMETER**. **ODOMETRICAL**, a. *ō dŏ-mĕt'rĭ-kāl*, pertaining to an odometer.

O'DONNELL, *o-dŏn'ĕl*, **LEOPOLD**, Duke of Tetuan, Marshal of Spain: 1809, Jan. 12—1867, Nov. 5; b. Santa Cruz, Teneriffe; descended from an ancient Irish family that emigrated to Spain after the battle of the Boyne; son of Henry Joseph O'D. (1769–1834, Count of La Bisbal). Young O'D. entered the Spanish army, and bravely espoused the cause of the infant Queen Isabella against her uncle, Don Carlos; when the Carlists were overthrown, he was created

ODONTALGIA—ODONTOLOGY.

Count of Lucera, made gen. of brigade, and chief of staff to Espartero. He took the side of the queen-mother 1840; emigrated with her to France, at the time when her cause seemed desperate; and took up his residence at Orleans, where he planned many of the political risings and disturbances under the rule of Espartero. He headed in person a revolt of the Navarrese against the minister, but on its failure returned to France. In 1843, his intrigues against Espartero (q.v.) were successful; and he was rewarded by the gov. generalship of Cuba, where he amassed a large fortune by favoring the iniquitous trade in slaves. When he returned to Spain (1845) he intrigued against Bravo Murillo and Narvaez; and when the latter was succeeded by Sartorius, O'D., proscribed by the govt., headed a military insurrection. Defeated, and driven into Andalusia 1854, he issued a liberal manifesto. When Espartero gave in his adhesion, the Spaniards rose *en masse*, and replaced the ex-regent at the helm. Espartero made O'D. a marshal and minister of war. O'D. again plotted against his old benefactor, and in 1856 supplanted him by a *coup d'état*. He was in three months' time succeeded by Narvaez, but in 1858 he returned to power; and 1859 he commanded the army in Morocco. The campaign was tedious, but at last O'D., gaining a complete victory, took the Moorish camp, and the city of Tetuan surrendered. The Emperor of Morocco submitted to a loss of territory, and O'D. was made Duke of Tetuan. In 1866 his cabinet was upset by Narvaez. He then retired to Paris, and died at Biarritz. The O'D. ministry improved the finances, army, and administration of Spain.

ODONTALGIA, n. *ō-dŏn-tăl'jĭ-ă*, or **O'DONTAL'GY**, n. *-tăl'jĭ* [Gr. *odous*, or *odonta*, a tooth; *algos*, pain]: toothache. **O'DONTALGIC**, a. *-jĭk*, pertaining to the toothache: N. a remedy for the toothache.

ODONTO, n. *ō-dŏn-tŏ* [Gr. *odous*, or *odonta*, a tooth]: a powder for the teeth. **ODON'TOID**, a. *-toyd* [Gr. *eidos*, appearance]: tooth like.

ODONTOBLASTS, n. plu *ō-dŏn'tŏ-blăsts* [Gr. *odonta*, a tooth; *blastos*, a bud, a sucker]: large cells which secrete the dentine of the teeth.

ODONTOCETI, n. plu *ō-dŏn'tŏ-sē-tĭ* [Gr. *odontes*, teeth; *kētos*, a whale]: the toothed whales, in contradistinction to the baleen or whalebone whales.

ODONTOGRAPH, n. *ō-dŏn'tŏ-grăf* [Gr. *odous*, or *odonta*, a tooth; *graphō*, I write]: an instr. for finding the arcs of circles, used in the construction of toothed wheels which will work truly on each other. **O'DONTOG'RAPHY**, n. *-tŏg'-ră-fĭ*, that branch of anatomy which treats of the structure and nature of teeth.

ODONTOLITE, n. *ō-dŏn'tŏ-lĭt* [Gr. *odous*, or *odonta*, a tooth; *lithes*, a stone]: a petrified tooth; a bone or tooth colored by phosphate of iron; also called *bone turquoise*.

ODONTOLOGY, n. *ō-dŏn-tăl'ŏ-jĭ* [Gr. *odous*, or *odonta*, a tooth; *logos*, a discourse]: that branch of the science of anatomy which treats of teeth (see **TEETH**). **ODON'TOLOG'ICAL**, a. *-tĭj e-kal*, of or belonging to.

ODONTOPHORE—OE.

ODONTOPHORE, n. *ō-dŏn'tō-fŏr* [Gr. *odous*, or *odonta*, a tooth; *phorĕō*, I bear]: the tongue or masticatory apparatus of Gasteropoda and Pteropoda, etc.

ODONTOPTERIS, n. *ō'dŏn-tŏp'tēr-ĭs* [Gr. *odous*, or *odonta*, a tooth; *ptĕris*, a fern]: a genus of fossil ferns found in the Coal measures—so called from the sharp tooth-like lobes of their leaflets.

ODONTORNITHIDÆ, n. plu. *ō-dŏn'tŏr-nĭth'ĭ-dē*, or **ODONTORNITHES**, n. plu. *ō-dŏn'tŏr-nĭthēz* [Gr. *odous* or *odonta*, a tooth; *ornĭs* or *ornĭtha*, a bird]: in *zool.*, name proposed by Marsh for the toothed birds of which some have been described for the first time by him. Marsh divides the O. into three orders, making the European *Archæopteryx* (see **SOLENHOFEN LITHOGRAPHIC STONE**) the first. The remains of the second and third orders have recently been found in considerable quantities in the middle cretaceous formations of Kansas. The *Hesperornis* was a large-boned aquatic animal without power of flight, but probably with strong powers of swimming and diving. From bill to tail its length was six ft.; the neck was long and flexible; the teeth, covered with smooth enamel, terminated upward in conical pointed crowns, and downward in stout fangs. The third order, *Ichthyornis*, is subdivided into two genera, *Ichthyornis* and *Apatornis*, both smaller birds resembling terns. See Marsh's *Odontornithes* (1880).

ODONTOSTOMATOUS, a. *ō-dŏn'tō-stŏm'ā-tūs* [Gr. *odous*, or *odonta*, a tooth; *stoma*, a mouth—gen. *stomātos*]: a term applied to insects having mandibles.

ODOR, n. *ō'dŏr* [F. *odeur*—from L. *odor*, a smell: It. *odore*]: a sweet or an offensive smell; perfume. **ODOROUS**, a. *ō'dŏr-ūs*, sweet of scent; fragrant. **O'DOROUSLY**, ad. *-lĭ*. **O'DORLESS**, a. *-lēs*, destitute of odor. **ODORINE**, u. *ō'dēr-ĭn*, a substance obtained from the volatile oil of bones. **IN BAD ODOR**, out of favor; in bad repute.

ODORIFEROUS, a. *ō'dēr-ĭf'ēr-ūs* [L. *odor*, a smell; *fero*, I bear or carry]: sweet-scented; diffusing fragrance. **O'DORIFEROUSLY**, ad. *-lĭ*. **O'DORIFEROUSNESS**, n. *-nēs*, the quality of being odorous, or of diffusing odor.

ODS, *ōdz* [corruption of *God's*]: in *OE.*, a common prefix in certain half suppressed oaths. **ODSBODIKINS**, int. *ōdz-bŏd'ĭ kĭnz* [*bodi* for *body*; *kin*, little]: in *OE.*, the little body of God. **ODSPIT'IKINS**, int. *-pĭt'ĭ-kĭnz* [*piti* for *pity*]: the pity or mercy of God; may be a form of *odsbodikins*.

ODYLIC, a. *ō-dĭl'ĭk* [Gr. *hodos*, a way; *hulē*, matter, a material]: pertaining to the force or natural power which is supposed by many to produce the phenomena of mesmerism or animal magnetism. **ODYLIC FORCE**, or **ODYLE**, n. *ō dĭl*, the supposed force or power: see **OD**.

ODYSSEY, n. *ōd'ĭs sĭ*: the second of the great epic poems by Homer, narrating the wanderings of *Odysseus* or Ulysses. **ODYSSEUS**, Greek form of the Latin *Ulysses*, which see.

Æ sounding ē—when words sometimes spelt with æ cannot be found, consult the word as if beginning with e.

OE, n., or **OY**, n. *ō ē* [Gael. *ogha*], a grandchild.

ŒCOLAMPADIUS—ŒDEMA.

ŒCOLAMPADIUS, *ĕk-o-lām-pā'dī-ūs*, Ger. *ā-ko-lām-pā'-dī-ūs*, JOANNES—Latinized from the German JOHANN HAUSSCHEIN: eminent coadjutor of Zwingli in the Swiss Reformation, 1482-1531, Nov 23; b. Weinsberg, in Swabia. He relinquished the study of law at Bologna for that of theology at Heidelberg, became tutor to the sons of the elector palatine, and subsequently preacher in Weinsberg. This office he resigned in order to study the Greek language under Reuchlin at Stuttgart. He also learned Hebrew from a Spanish physician, Matthew Adrian. Being appointed preacher at Basel, he formed the acquaintance of Erasmus, who highly appreciated his classical attainments, and employed his assistance in his edition of the New Test. In 1516, Œ. left Basel for Augsburg, where also he filled the office of preacher, and where he entered into a convent. But Luther's publications so greatly influenced him, that he left the convent, and became chaplain to Franz von Sickingen, after whose death he returned to Basel 1522, and in the capacity of preacher and prof. of theology commenced his career as a reformer. He held disputations with supporters of the Church of Rome in Baden 1526, and in Bern 1528. In the controversy concerning the Lord's Supper, he gradually adopted more and more the views of Zwingli, and at last 1525 maintained them in a treatise, to which the Swabian ministers replied in the *Syngramma Suevicum*. In 1529 he disputed with Luther in the conference at Marburg. He died at Basel, not long after the death of his friend Zwingli. He was remarkable for gentleness of character. His treatise *De Ritū Paschali* and his *Epistola Canoniorum Indocorum ad Eccium* are the most noted of his works.—See Herzog, *Das Leben des Joh. Œcolampadius* (1843); and Hagenbach's *Œcolampadius* (1859).

ŒCUMENICAL, or ECUMENICAL (q.v.), *ĕk-ū-mĕn'īk-al* [Gr. *oikoumenike*, 'of, or belonging to, the *oikoumene*,' 'the world']: term synonymous with general or universal, applied to councils of the entire church: see COUNCIL. The conditions necessary to constitute an œcumenical council are a subject of controversy, which in Rom. Cath. theology assumes importance. See ECUMENIC.

ŒDEMA, ŒDEMATOUS: see EDEMA.

OEDENBURG—ŒDIPUS.

OEDENBURG, *ó'dèn-búrčh* (Hung. *Soprony*; anc. *Sempronium*): beautiful town in Hungary, cap. of the county of O., in a fertile plain on the Ilkva, branch of the Raab. The wine of Rust, a vill. near, ranks next to Tokay. The inhabitants of O. are mostly of German race. Pop. (1880) 23,222; (1890) 27,213.

ŒDIPUS, *ěd é-pūs* (Gr. *Oidipous*): hero of a celebrated legend, which, though of the most revolting nature in itself, has supplied both Euripides and Sophocles with the subject-matter of some of their most celebrated tragedies. The story, as generally related, is as follows: Œ. was son of Laius, King of Thebes, by Jocaste; but his father having consulted the oracle to ascertain whether he should have any issue, was informed that his wife would bring forth a son, by whom he (Laius) should ultimately be slain. Determined to avert so terrible an omen, Laius ordered the son which Jocaste bare him to have his feet pierced through, and to be exposed to perish on Mt. Cithæron. In this helpless condition, Œ. was discovered by a herdsman, and conveyed to the court of Polybus, King of Corinth, who, in allusion to the swollen feet of the child, named him *Œdipus* (from *oideō*, I swell, and *pous*, the foot); and with his wife, Merope, brought him up as his own son. Having come to man's estate, Œ. was one day taunted with the obscurity of his origin, and in consequence proceeded to Delphi, to consult the oracle. The response which he received was, that he would slay his father, and commit incest with his mother. To escape this fate, he avoided returning to Corinth, and proceeded to Thebes, on approaching which he encountered the chariot of his father; and the charioteer ordering him out of the way a quarrel ensued, in which Œ. ignorantly slew Laius. The famous Sphinx (q.v.) now appeared near Thebes, and seating herself on a rock, propounded a riddle to every one who passed by, putting to death all who failed to solve it. The terror of the Thebans was extreme, and in despair they offered the kingdom, together with the hand of the queen, to the person who should be successful in delivering it from the monster. Œ. came forward; the Sphinx asked him, 'What being has four feet, two feet, and three feet; only one voice; but whose feet vary, and when it has most, is weakest?' Œ. replied that it was 'Man;' whereupon the Sphinx threw itself headlong from the rock. Œ. now became king, husband of his mother, Jocaste. From their incestuous union sprung Eteocles, Polynices, Antigone, and Ismene. A mysterious plague now devastated the country, and when the oracle declared that before it could be stayed, the murderer of Laius should be banished from the country, Œ. was told by the prophet Tir-sias that he himself had both murdered his father and committed incest with his mother. In his horror he put out his own eyes, that he might no more look upon his fellow-creatures, while Jocaste hanged herself. Driven from his throne by his sons and his brother in law, Creon, Œ. wandered toward Attica, accompanied by Antigone, and took refuge in the grove of the Eumenides, who charitably removed him from earth; but the latter part of his life is variously told.

ÆGIR—OEHLENSCHLÄGER.

ÆGIR: in Scandinavian mythology, the ocean-god.

ÆGOPHONY, n. *ê-gîf' o-nĕ* [Gr. *aîx*, genit., *aîgos*, a goat; *phônê*, a sound]: in *pathol.*, peculiar tremulous noise, like the bleating of a goat, accompanying bronchophony in cases of pleurisy.

OEHLENSCHLÄGER. *ô-lén-shlā'gér*, ADAM GOTTLOB: greatest poet of n. Europe: 1779, Nov. 14—1850, Jan. 20; b. Vesterbro, suburb of Copenhagen. His early years were spent at the palace of Fredericksborg, in the neighborhood of the Danish capital, where his father was employed, first as organist, afterward as steward or bailiff. During the absence of the royal family in the winter, O. and his sister amused themselves in roaming over the palace, and examining the paintings and works of art which it contained, and in improvising private theatricals, for which he supplied original pieces. After an irregular and desultory education, O.'s love of the drama led him to offer his services to the manager of the Copenhagen theatre; but discovering soon that he had no chance of rising above the rank of a mere supernumerary, he entered the Univ. of Copenhagen as a student of law. For a time he seems to have pursued his studies with assiduity, under the direction of his friend, A. S. Oersted, brother of Hans Christian Oersted (q.v.). O.'s studies were interrupted 1801, when, on the bombardment of Copenhagen by Nelson and Parker, he and his friends served in the student-corps of volunteers. After this event, which roused the dormant patriotism of the nation, O. found the study of law irksome, and turned to the history and mythology of his own country. In 1803 appeared his first collection of poems, including one longer dramatic piece, *St. Hans Aften-Spil*, which attracted favorable notice for the lively fancy with which national habits and local characteristics were portrayed. The *Vaubunders Saga* in the *Poetiske Skrifter*, 1805, and *Aladdin's forunderlige Lampe*, completed his success, and raised him to the rank of the first of living Danish poets; the former of these works having shown a marvelous capacity for reflecting the dark and stern coloring of the old northern Sagas, while the latter evinced a rich and genial poetic fancy. These early efforts were rewarded by a travelling pension, which enabled O. to spend some years in visiting various parts of the continent, and becoming acquainted with the great literary celebrities of the day, such as the Weimar circle of whom Goethe was head. During this period, O. wrote *Hakon Jarl*, the first of his long series of northern tragedies, at Halle (1807; Eng. transl. by F. C. Lascelles 1875), and *Correggio*, at Rome (1809; Eng. transl. by Theodore Martin, 1854). In 1810 O. returned to Denmark, where he was hailed with acclamation as the greatest tragic poet Denmark had ever known; and having soon afterward obtained the chair of æsthetics at the university, and received various substantial proofs of royal favor, he married, and settled in the capital, where however his peace was rudely disturbed by a literary feud with Baggesen, Danish poet and critic, whose poetical supremacy had been superseded by that of Oehlenschläger. It

1819 appeared one of O.'s most masterly productions, *Nordens Guder*, and this and his numerous dramatic compositions about the same period, show that the severe criticism to which his writings had been exposed during the celebrated Baggesen quarrel, had corrected some of the faults, and lessened the self conceit which had characterized his earlier works. His reputation abroad and at home spread with his increasing years; and after having repeatedly visited southern Europe, he went 1829 to Sweden, where his arrival was welcomed by a public ovation. After having received repeated marks of friendship from various sovereigns, he was honored in his own country by the celebration, 1849, of a grand public festival in the palace at Copenhagen. But this ovation was followed in less than two months by his death. His funeral was made a national solemnity, and he was followed to the grave by a civic procession which included members of every class of society from princes to artisans. The fame of O. will rest principally on his 24 tragedies, of which 19 were on northern subjects. These all were composed originally in Danish, and re-written by himself in German. Besides those already referred to, the best are *Knud den Store*, *Palnatoke*, *Axel og Walborg*, *Væringerne i Miklagord*. His poems are mostly mediocre, and his numerous prose writings deserve little notice. His Danish and German works amount to 62 vols., to which must be added 4 vols. of his *Erindringer*, or *Autobiographical Recollections*, published after his death.

OEHLER, *ö'ler*, GUSTAV FRIEDRICH: German scholar and theologian: 1812, June 10—1872, Feb. 20; b. Ebingen in Würtemberg. He was a student at Tübingen; lecturer in the Missionary Institution at Basle 1834-37; teacher afterward in the Tübingen Univ.; vicar in Stuttgart, 1840; prof. in the theol. sem. at Schöndal; prof. at Breslau, Silesia, 1845-52; after which he presided over the higher theol. sem. of Tübingen. He contributed many essays to Herzog and Smid's encyclopedia. His books are *Prolegomena zur Theologie des Alten Testaments* (1845); *Commentationum ad Theologiam Pertinentium* (pars I 1846); *Die Grundzüge der Altestamentlichen Weisheit* (1854); *Über zur Heidnischen Mantik* (1861); *Zwei Seminarreden* (1870); *Gesammelte Seminarreden* (1872); and his chief work *Theologie des Alten Testaments* (1873), posthumous, and of great value, containing the substance of his lectures, 1839-71, and translated by E. D. Smith—*Theology of the Old Testament*, Edinburgh, 1874. He is noted for excellence in exegesis. Between the extreme views of those who depreciate the old dispensation as an effete religion, wholly supplanted by the new and those who regard Christianity as an organic development from the old, he held a medium and conservative place. See *Worte zum Andenken an Dr. G. F. v. Oehler*, 1873, for sketch of his life, with addresses at his funeral.

ŒIL DE BŒUF—ŒNOKRINE.

ŒIL DE BŒUF, *ē'il dēk bŷf* [French, ox's eye]: in *architecture*, a small round or oval opening in the frieze or roof of a large building, which gives light to spaces otherwise dark. The most famous is that in the anteroom (where the courtiers waited) of the royal chamber at Versailles, which gave name to the apartment. Hence the expression, *Les Fastes de l'Œil-de-Bœuf*—i e., the history of the courtiers of the Grand Monarque, and by extension, of courtiers in general.

ŒLAND, *ö lint*: long and narrow island in the Baltic, off the e. coast of Sweden, opposite to, and forming part of, the län of Kalmar, and 4 to 17 m. from the shore. It is 85 m. in length, 2 to 8 m. in breadth; 588 sq. m. The island, scarcely more than a line cliff, is scantily covered with soil, but in some parts is well wooded, and has good pasture-ground, which is turned to account by the islanders, who rear cattle, horses, and sheep. In favorable seasons, barley, oats, and flax yield good crops. The fishing is excellent all round the coasts. There are large alum-works on the island, and an extensive line of wind mills along the range of the Alvar Hills, near which stands Borgholm, founded 1817 (pop. 900), the only town on the island. N. of Œ. lies the steep wooded island-cliff, the Jungfruen, or Blakulla, which bears the mythical reputation of having been the scene of various deeds of witchcraft, and the favorite resort of wizards and witches.—Pop. of the island Œ., 45,000.

OELS, *ölss*: small town of Prussian Silesia, on a plain on the Oelsa or Oelse, 16 m. e. n e. of Breslau. Its castle, built 1558, is surrounded by ramparts and ditches. It contains a gymnasium, several churches, and other public edifices. There are manufactures of shoes and of cloth goods.—Pop. (1880) 10,157.

ŒNANTHIC, a. *ē-năn'thik* [Gr. *oinos*, wine; *anthos*, a flower]: applied to the essential oil or substance which gives wine its characteristic flavor.

ŒNANTHYLIC ACID, *ē-năn-thīl'ik ās'īd* ($C_7H_{14}O_2$): one of the volatile fatty acids of the general formula $C_nH_{2n}O_2$. It is a colorless oily fluid, with aromatic odor, lighter than water, and insoluble in that fluid, but dissolving readily in alcohol and ether. According to Miller (*Organic Chemistry*, 2d ed. p. 355), it may be exposed to a cold of 0° without becoming solid; it boils and may be distilled (with partial decomposition) at 413° F. It is (like many of the allied fatty acids) one of the products of the oxidation of Oleic Acid (q.v.) by nitric acid, and is yielded likewise by the action of nitric acid on castor oil, wax, and various fats. Its most characteristic salt is the œnanthylate of copper, which crystallizes in beautiful green needles.

ŒNOKRINE, n. *ē-nōk'rīn* [Gr. *oinos*, wine; *krinō*, I separate]: in *chem*, the name of a test-paper sold in Paris for the purpose of detecting the fraudulent coloration of wines. It is said that $\frac{1}{1000}$ of magenta in wine is sufficient to give the paper a violet shade.

ÆNOLIN—ÆNOTHERA.

ÆNOLIN, n. *è'not-lìn*: in chem., $C_{10}H_{10}$: coloring matter of red wine, obtained by precipitating with basic acetate of lead, and exhausting the dried precipitate with a mixture of ether and hydrochloric acid. It is a nearly black powder when dry, insoluble in pure water, but soluble in water containing a vegetable acid, and easily soluble in alcohol.

ÆNOLOGY, n. *è-nò-lò-jì* [Gr *oinos*, wine]. science of wine; that branch of science which deals with the nature, qualities, and varieties of wines.

ÆNOMANIA, n. *è-nò-mā-ni-a* [Gr *oinos*, wine; *mania*, madness]: insatiable desire for wine or other intoxicating liquors; dipsomania, delirium tremens.

ÆNOTHERA, *èn-o-thè'ra* or *è-nòth è-ra*: genus of plants of nat. order *Onagraceæ* (q.v.), having four petals and eight stamens, the calyx-limb 4-cleft, the segments reflexed: the capsule 4-valved, with many naked seeds. The **EVENING PRIMROSE** (*Æ. biennis*), native of Va., has been known in Europe since 1614, and is now naturalized in many parts of Europe, on the banks of rivers, in thickets,



Evening Primrose (*Ænothéra biennis*):

a, flower divested of calyx and corolla to show the parts of fructification; *b*, tuberous root.

on sandy grounds, etc. It is a biennial plant, and produces in the first year elliptic or obovate obtuse leaves, and in the second year a stem $1\frac{1}{2}$ —4 ft. high, which bears at its summit numerous yellow flowers in a leafy spike. The flowers are fragrant in the evening. The root somewhat resembles a carrot in shape, but is short; it is usually red, fleshy, and tender; it is eaten in salads or in soups, and as a boiled vegetable. The plant is often cultivated for its large yellow flowers. Several other species of *Ænothéra*, natives of N. America, are occasionally cultivated in gardens, and have eatable and pleasant roots.

O'ER—OERSTED.

O'ER, prep. *ör*: contraction for OVER, which see.

OEREBRO, *örë-brô*: inland town of Sweden, cap. of the län of O., at the entrance of the Swart-Elf into the Heilmar Lake, 100 m. w. of Stockholm. The town retains many memorials of its earlier prosperity, when it was frequently the residence of the Swedish rulers, who found its central position in the more fertile southern portion of the kingdom favorable for safety and pleasantness. The old castle was built by Berger Jarl, 13th c.; and was in after times frequently chosen as seat of the national diets. O. has manufactories of wax-cloth, carpets, woollen goods, stockings, guns, and mirrors; and these industrial products, together with the minerals obtained from the neighboring silver, copper, and iron mines, are conveyed to Gothenborg and Stockholm by means of the extensive system of canals which connects the lakes of the interior with the maritime ports. Pop. (1880) 11,785; (1890) 14,893.

OERSTED, *ör stöd* HANS CHRISTIAN: scientific discoverer: 1777–1851. Mar. 9, b. at Rudkjobing, on the Danish island of Langeland, where his father was an apothecary. In 1794 he entered the Univ. of Copenhagen, where he took the degree PH D. 1799, and soon afterward became assistant to the prof. of medicine, in which capacity he gave lectures on chemistry and natural philosophy. In 1806, he was appointed extraordinary prof. of nat. philosophy in the Univ. of Copenhagen. In 1812, he visited Germany and France, and at Berlin wrote his famous essay on the identity of chemical and electrical forces, in which first he developed the principles which were the base of his great discovery of the intimate connection between magnetism and electricity and galvanism. In 1819, in a Latin essay, *Experimenta circa Efficaciam Conflictus Electrici in Acum Magneticam*, addressed to all the scientific societies and leading savans, O. made good his claim as originator of the new science of electro-magnetism. His discoveries formed an era in science and obtained for him the Copley Medal from the Royal Soc. of England, and the principal mathematical prize in the gift of the Institute of Paris. The leading idea of this great discovery had been in his mind since soon after the discovery of the galvanic battery by Volta. Among his many other chemical discoveries was his demonstration of the existence of the metal aluminium in alumina. Honors increased upon him with his years: he was corresponding member of the French Institute, perpetual sec. to the Royal Soc. of Sciences in Copenhagen, a knight of the Prussian Order of Merit, of the French Legion of Honor and of the Danish Order of the Dannebrog, and a councillor of state. O. earnestly sought to make science popular among all classes, writing scientific articles for the newspapers and magazines, and giving courses of popular scientific lectures to the general public, besides his university prelections. The majority of his more important physical and chemical papers are in Pogendorff's *Annalen*, and were written by him in German or French, both of which he wrote with the same facility as his own language. At the close of 1850, a national jubilee

OESEL—ŒSOPHAGISM.

was held in honor of the 50th anniversary of his connection with the Univ. of Copenhagen. He died at Copenhagen in the following year. O. is remembered as not only a scientist, but as also a man whose eloquent and earnest advocacy of liberal principles contributed much to the attainment of constitutional freedom in Denmark.

OESEL, *ö sel*: island of Russia, in the Baltic, across the mouth of the Gulf of Riga, and belonging to the govt. of Livonia. It is about 80 m in length n.e. to s.w., and about 40 m in greatest breadth, but the s.w. end consists of a comparatively narrow peninsula. A narrow strait separates the n.e. end from the island of Dago. The surface is undulating, broken by low hills, marshy, watered by numerous small streams, and well wooded. The coast is generally high cliffs. The climate is milder than that of neighboring continental districts. The rocks are generally calcareous, and the soil is in many places gravelly; the chief crops are wheat, oats, rye, barley, and peas. The rearing of cattle, horses, and sheep, and fishing, are principal occupations of the inhabitants. The seal fisheries are important. In religion the inhabitants mostly are Lutherans. The only town is Arensburg, on the s.e. coast (pop. 1880, 3,460). Many of the inhabitants of Arensburg are of German descent, as are the nobles and clergy of the island; but the peasantry are Esthonian. The islanders of O. were in early times noted as pirates. The Danish king Waldemar conquered the island in the beginning of the 13th c. Albert von Buxhöden, Bp. of Leal in Livonia, obtained it from Denmark 1227, in order that he might reduce its inhabitants to subjection, and convert them to Christianity. Being partly subdued by the Teutonic Knights, it remained more than 200 years under its bishops, the seat of the bishopric being transferred to the island. The last bishop sold it to Denmark 1559. It remained a Danish province till 1645, when it was given up to Sweden, and in 1721, fell into the hands of Russia. Pop 46,000.

ŒSOPHAGISM, n. *ê-sîf' a-jîzm* [L. *œsophagus*, F. *œsophagisme*]: in *pathol.*, the erroneous feeling that one has swallowed a pin or a fish-bone, etc. It is a nervous affection, and has sometimes been cured by a dose of opium at bed-time.

ŒSOPHAGUS.

ŒSOPHAGUS, n. *ē-sŏf'ă-gŭs* [Gr. *oisŏphăgŏs*, the gullet—from *oisō*, I shall bear or carry for another: *phagein*, to eat]: in *anat.*, the canal through which food and drink pass to the stomach; the gullet. **ŒSOPHAGOTOMY**, n. *-gŏt'-ŏ-mĭ* [Gr. *tomē*, a cutting]: the operation of making an opening into the œsophagus or gullet.—The *Œsophagus* is a membranous canal, about nine inches in length, extending from the pharynx to the stomach, thus a part of the alimentary canal. It commences at the lower border of the cricoid cartilage of the larynx, descends in a nearly vertical direction along the front of the spine, passes through an opening in the diaphragm, thus enters the abdomen, and terminates in the cardiac orifice of the stomach opposite the ninth dorsal vertebra. It has three coats—viz., an external or muscular coat (consisting of two strata of fibres of considerable thickness—an external, longitudinal, and an internal circular; an internal or mucous coat, covered with a thick layer of squamous epithelium; and an intermediate cellular coat, uniting the muscular and mucous coats. In this tissue are a large number of œsophageal glands, which open on the surface by a long excretory duct, and are most numerous round the cardiac orifice, where they form a complete ring.

The Œ. is liable to a number of morbid changes, none however, very frequent.

The most prominent symptoms of *Œsophagitis*, or *Inflammation of the Œsophagus*, is pain between the shoulders, or behind the trachea or sternum, augmented in deglutition, which is usually more or less difficult, and sometimes impossible. The affection is regarded as very rare, unless when it originates from direct application of irritating or very hot substances, or from mechanical violence—e.g., from unskilful application of the stomach-pump or probang. Dr. Copland, however, is of opinion that it is frequent in children, particularly during infancy, and observes that 'when the milk is thrown up unchanged we should always suspect the existence of inflammation of the œsophagus.' The ordinary treatment employed in inflammatory diseases must not be adopted; and if inability to swallow exists, nourishing liquids, such as strong beef-tea, must be injected into the lower bowel.

Spasm of the Œsophagus—a morbid muscular contraction of the tube, producing more or less difficulty of swallowing—is much more frequent than inflammation. The spasm generally comes on suddenly during a meal. On attempt to swallow, the food is arrested, and is either immediately rejected with considerable force, or is retained for a time, and then brought up by regurgitation; the former when the contraction is in the upper part of the canal, the latter when it is near the lower part. In some cases, solids can be swallowed, while liquids excite spasm; in other cases the opposite is observed; but in general either solids or liquids suffice to excite the contraction, when a predisposition exists. The predisposition consists usually in an excitable state of the nervous system, as in hysteria, hypochondriasis, and generally in a debilitated

ŒSOPHAGUS.

condition of the body. An attack may consist of a single paroxysm, lasting only a few hours, or it may be persistent for months or even years. The treatment must be directed to establishment of the general health, by administration of tonics and anti spasmodics by attention to the bowels and the various secretions, by exercise in the open air, the shower-bath, nutritious diet, etc.; and by avoidance of excessive use of strong tea, coffee, and tobacco. Care must be taken not to swallow anything imperfectly masticated or too hot; and the occasional passage of a bougie is recommended. Brodie relates a case that ceased spontaneously on the removal of bleeding piles. Strychnia is deserving of a trial when other means fail; and if the affection assume a decidedly periodic form, quinia will usually be an effectual remedy.

Paralysis of the Œsophagus is present in certain forms of organic disease of the brain or spinal cord which are seldom amenable to treatment, and it is often a very important part of the palsy frequent in the most severe and chronic cases of insanity. In this affection there is inability to swallow, but no pain or other symptom of spasm; and a bougie may be passed without obstruction. The patient must be fed by the stomach pump, and nutrient injections of strong beef tea should be thrown into the lower bowel.

Permanent or Organic Stricture of the Œsophagus may arise from inflammatory thickening and induration of its coats, or from scirrhus and other formations either in the walls of or external to the tube. The most common seat of this affection is at its upper part. The symptoms are persistent and gradually increasing difficulty of swallowing, occasionally aggravated by fits of spasm; and a bougie, when passed, always meets with resistance at the same spot. When the contraction is due to inflammatory thickening, it may arise from abuse of alcoholic drinks, or from swallowing boiling or corrosive fluids; and it is said that it has been induced by violent retching in sea-sickness. If unrelieved the disease must prove fatal, either by ulceration of the tube around the seat of the structure, or by sheer starvation. When the affection originates in inflammation, some advantage may be derived from a mild course of mercury, occasional leeching, and narcotics; and especially from occasional passing of a bougie, of a ball-probang (an ivory ball attached to a piece of whalebone), or of a piece of sponge moistened with a weak solution of nitrate of silver. If it is dependent on malignant disease, and the tissues have become softened by infiltration of the morbid deposit, the bougie must be directed with the greatest care through the structure, as a false passage may be easily made into important adjacent cavities.

Foreign bodies frequently pass into the Œ., and become impacted there, giving rise to a sense of choking and fits of suffocative cough, especially when they are seated in its upper part. They may not only cause immediate death by exciting spasm of the glottis, but if allowed to remain, may excite ulceration of the parts, and thus cause death by exhaustion. If the body is small and sharp (a fish-bone, e.g.)

ÆSTRIDÆ—OF.

the patient may rid himself of it by swallowing a large mouthful of bread; if it is large and soft (such as too large a mouthful of meat), it may usually be pushed down into the stomach with the probang; while large hard bodies (e.g., pieces of bone) should be brought up either by the action of an emetic, or by long curved forceps. If the offending body can neither be brought up nor pushed down, it must be extracted by the operation of (*Esophagotomy*, which can be performed only when the impacted body is not very low down.

ÆSTRIDÆ, *ēs'trī-dē*: family of dipterous insects, having a mere rudimentary proboscis or none, the palpi also sometimes wanting, and the mouth reduced to three tubercles; antennæ short and inclosed in a cavity in the forepart of the head; abdomen large. They are generally very hairy, the hair often colored in rings. They resemble flesh-flies in general appearance, and are nearly allied to *Muscidæ*. The perfect insect is very short-lived. The females deposit their eggs on different species of herbivorous mammalia, each insect being limited to a particular kind of quadruped, and selecting for its eggs a situation on the animal suitable to the habits of the larva, which differ in different species, though the larvæ of all are parasites of herbivorous quadrupeds. For the characters and habits of some of the most notable species, see BOT. Animals seem generally to have a strong instinctive dread of the O. which infest them.

ÆTA, *ē ta*. MOUNT: mountain on the s. boundary of anc. Thessaly (q.v.).

OETTINGEN, *öt tīng-ēn*: ancient co. in Germany existing in the 13th c. in the Riesgau, Swabia. It is now mediatised. Since 1806, part of the territory has belonged to Bavaria, and since 1810, part to Württemberg. Wallerstein, chief town of the latter portion, is famous for its palace and its library containing 100,000 vols. It is now in the Bavarian dist. of Neuburg and Swabia.

OF, *ōf*: another form of the prefix **OB**, which see.

OF, prep. *ōv* [L. *ab*; Iccl. *af*; Gr. *apo*; Skr. *apa*; AS. *of*, from, of]: from; proceeding from; out of; belonging to; concerning; denoting possession or property; according to; denoting properties, qualities, or condition; in *OE*, by; noting change from. **OFF**, a. *ōf*, denoting distance; in *driving*, applied to the right-hand side: AD. from; away; not toward; distant from; denoting the action of removing or separating, as to cut *off*: **PREP.** not on: **INT.** away; begone; among *seamen*, abreast of or near. **BE OFF**, away; depart. **FROM OFF**, denoting removal. **ILL OFF**, or **BADLY OFF**, having fared ill; in a state of poverty. **OFF AND ON**, at one time anxious, at another careless, about anything. **OFF-CUT**, the part of a printed sheet cut off and inserted in the middle of the remainder. **OFF-HAND**, without preparation or hesitation; without respect. **OFF-SIDE**, the right-hand side; the left hand side being called the *near side*. **OF LATE**, recently. **OF OLD**, formerly; in time long past. **TO BE OFF**, to depart; to recede from an intended contract or

O'FALLON—OFFA'S DYKE.

design. To COME OFF, to escape; to fare in the event; to happen, as, the race came off. To GET OFF, to alight; to come down; to make escape. To GO OFF, to depart; to desert; to take fire and be discharged, as a gun. To TAKE OFF, to take away; to mimic. WELL OFF, having fared well; in good circumstances. To STAND OFF AND ON, among *seamen*, to sail near to and away from the land alternately; on different tacks.

O'FALLON, *ô-fäl'lon*, JOHN: 1791, Nov. 23—1865, Dec. 18; b Louisville, Ky.; son of Dr. James O'F., who emigrated to Wilmington, N. C., 1774. The son served under Gen. William H. Harrison, and was wounded at Tippecanoe. He fought also in the war of 1812. He acquired a fortune as a merchant in St. Louis, Mo., and gave more than \$1,000,000 to charitable and educational institutions, including the endowment of \$100,000 to the O'Fallon Polytechnic Institute, now part of St. Louis Univ. He gave liberally to Washington Univ. also, and built a medical coll. and a dispensary. He died in St. Louis.

O'FEN: see BUDA.

OFF: see under OF.

OFFAL, n. *ôffil* [prov. Ger. *affall*, refuse or dross: Dan. *affald*, a falling away, offal]: that which is thrown away as of no value, as certain parts of an animal butchered; refuse; coarse meat; rubbish. *Note*.—OFFAL was formerly used of chips of wood falling from a cut log, and is merely compounded of OFF and FALL—see Skeat.

OFFA'S DYKE, *ôf'faz dik*: remarkable relic of antiquity, an intrenchment extending along the whole border of England and Wales, from the n. coast of Flintshire, on the estuary of the Dee, through the counties Denbigh, Montgomery, Salop, Radnor, and Hereford, into Gloucestershire, where its s. termination is near the mouth of the Wye, in the grounds of Sedbury Park, which overlook the estuary of the Severn. In some places, it is nearly obliterated by cultivation; in others, it is of considerable height, though its appearance nowhere indicates that it can ever have been of much value as a rampart. It is therefore generally supposed to have been intended chiefly as a line of demarkation. Nearly parallel with it, but at a distance varying from a few hundred yards to three m., on the e. or English side of it, is *Watt's Dyke*, a similar relic of antiquity, though seeming never to have been so great a work, and now in many places obliterated. It has been conjectured that the space between was neutral ground where the Anglo-Saxons and Welsh met for trading or other purposes. The principal dyke is ascribed by tradition to Offa, King of Mercia, who reigned in the 8th c.; but this is tradition, and not history.

OFFENBACH—OFFEND.

OFFENBACH, *of-fën-bâch*: manufacturing town of Hesse-Darmstadt, on the s. bank of the river Main, within the domains of the Princes of Isenburg-Birstein, 4 m. s.e. of Frankfurt. Pop. (1890) 35,154. O. is pleasantly situated in one of the richest parts of the valley of the Main, and is one of the most important manufacturing towns in the province. Among industrial products, its carriages have acquired high repute; and next to these, its book-bindings, articles of jewelry, gold and silver goods, carpets, and silk fabrics. It has also good manufactories of wax-cloth, papier-mâché snuff-boxes, tin-lacquered wares, umbrellas and parasols, wax candles, leather, hats, tobacco sugar, and ginger-bread and spiced cakes. O. has several churches, and a Jewish synagogue. The palace is the winter residence of the Isenburg-Birstein family, to whom the old castle, now in ruins, belongs. A pontoon-bridge crosses the river, and there is a railway to Frankfurt.

OFFENBACH, JACQUES: 1819, June 21—1880, Oct. 4; b. Cologne, of Jewish parentage: a naturalized Frenchman, composer of dramatic music highly popular over the continent of Europe. He studied music in Paris 1833, was admitted, as violoncellist, to the orchestra of the Opéra Comique 1834; exercised great tact, quickness of perception of popular taste, and amazing industry; became *chef d'orchestre* in the Théâtre Français 1847; and 1855 opened the Bouffes Parisiens (formerly the Théâtre Comte). Here his brilliant trifles drew crowds, and his success as introducer of a new form of opera bouffe culminated 1867 in *La Grande Duchesse de Gérolstein*, which captured the public in Europe and America. Other of O.'s popular burlesque operas are *Orphée aux Enfers*, *La Belle Hélène*, *La Barbe Bleu*, *Geneviève de Brabant*. He composed also numerous light lively operettas. O. worked to suit the popular taste, or to lead that taste into paths instantly acceptable to it. His work was not educational in a good sense: it was brilliantly diverting. It lacks refinement, high aim, and artistic principle. It had for its object the gaining of popular favor, and its success in this was complete.

OFFENCE: see **OFFENSE**.

OFFEND, v. *ôf-fënd'* [F. *offendre*, to offend, to hurt—from L. *offendĕrĕ*, to strike or dash against a thing: It. *offendere*]: to pain; to annoy; to displease; to affront; to sin; to cause dislike or anger; to commit transgression. **OFFENDING**, imp.: **ADJ.** displeasing; causing anger; committing sin. **OFFEND'ED**, pp.: **ADJ.** displeased. **OFFENDER**, n. *ôf-fënd'ĕr*, one who gives offense; a criminal; a guilty person.—**SYN.** of 'offend': to anger; assail; attack; transgress; violate; injure; vex; mortify; shock; wound; scandalize.

OFFENSE—OFFERTOIRE.

OFFENSE, n. *ôf-fens'* [F. *offense*—from L. *offensâre*, to strike or dash against a thing; *offensa*, an injury, an offense: It. *offensa*]: displeasure given or received; affront; injury; cause of sin; a sin; a fault; a crime. **OFFENSE'LESS**, a. *-lès*, free from a disposition to offend. **OFFENSE'LESSLY**, ad. *-lî*. **OFFENSIVE**, a. *ôf-fën'siv*, tending to cause offense, pain, or disgust; rude; insulting; used in attack; assailant; making the first attack: N. the part of attacking; a state or posture of attack. **OFFEN'SIVELY**, ad. *-lî*. **OFFEN'SIVENESS**, n. *-nès*, the quality or condition of being offensive; unpleasantness. **TO ACT ON THE OFFENSIVE**, to be the attacking party.—**SYN.** of 'offense': wickedness; transgression; displeasure; scandal; outrage; anger; attack; umbrage; resentment; misdeed; misdemeanor; trespass; delinquency; indignity; insult;—of 'offensive': displeasing; disgusting; injurious; disagreeable; distasteful; obnoxious; abhorrent; impertinent; saucy; attacking; scurrilous; abusive; insolent; opprobrious.

OFFENSES AGAINST RELIGION, PUBLIC PEACE, ETC.: see **RELIGION: PEACE: ETC.**

OFFENSIVE, OFFENSIVELY: see under **OFFENSE**.

OFFER, n. *ôf-fèr* [L. *offerre*, to bring or thrust forward—from *ob*, in the way; *fero*, I bring: It. *offerire*: F. *offrir*]: a proposal; first advance; the act of bidding a price; the sum bid: V. to make a proposal to: to present either to be accepted or rejected; to present in prayer or worship; to sacrifice; to bid, as, a price or reward; to exhibit; to attempt or make an attempt, as, they *offered* to land; to present itself; to declare a willingness. **OFFERING**, imp.: N. that which is offered; a gift presented at the altar as an act of worship (see **FIRST-FRUITS: SACRIFICE: OFFERTORY**); certain customary payments to the clergy. **OFFERED**, pp. *ôf-fèrd*. **OFFERER**, n. *-èr*, one who offers. **OFFERABLE**, a. *-â-bl*, that may be offered. **OFFERING DAY**, in the *Anglican Church*, a day of customary alms and offerings for the poor. The custom, still to some extent retained, is observed on Christmas day, Easter day, and on two other days, of which Whitsunday is often one.—**SYN.** of 'offer, v.': to present; immolate; bid; attempt; commence; propose; give; propound; move; proffer; tender.

OFFER AND ACCEPTANCE: one mode of entering into a contract of sale. At an auction, the highest offer is generally accepted as a matter of course; and when accepted, the contract is complete. An offer is often made by letter from one merchant to another to buy or sell goods. In such a case, the party offering is bound to await an answer by return of post or other means of message, and later than such return where there are several mails in a day: for until after some reasonable time for reply, the offer is supposed to be continuously made. But if A offer to B personally to sell, and B ask time to consider for a day, or any given time, A is not in usual cases bound to grant such time beyond the termination of the interview.

OFFERTOIRE, *ô-fèr-twar*: French for Offertory (q.v.).

OFFERTORY.

OFFERTORY, n. *ôf'fēr-tēr-i* [F. *offertoire*, an offertory—from *offrir*, to offer: mid. L. *offertorium*, a place to which offerings were brought, an offertory (see OFFER)]: that which is offered; the sentences in the Communion service read in church while the alms are collecting; the alms collected as a part of public Divine service. Offertory is the name given to that portion of the public liturgy of the Rom. Cath. Chh. with which the eucharistic service, strictly so called, commences. In the Roman Liturgy it consists of one or two verses from some book of Scripture, usually the Old Test., but sometimes from the Epistles. In the Ambrosian Liturgy it consists of a prayer, similar in form to the *collect* or *secret* of the mass; and in both, this recital is followed by the preparatory offering up of the bread and wine, accompanied by certain ceremonies and forms of prayer.

This offering of the bread and wine in the public service became, from a very early period, the occasion of a voluntary offering, on the part of the faithful; originally, it is probable, of the bread and wine designed for the eucharistic celebration and for the communion of the priest and the congregation (sometimes including also the absent members), also for the *agape* or common sacred feast which accompanied it. That portion of the offerings which remained in excess of what was requisite for these purposes was applied to the relief of the poor, and to the support of the clergy. These offerings were made ordinarily by the faithful in person, and were laid upon the altar; and the Ambrosian rite still preserves this usage in the ceremonial of the cathedral of Milan. By degrees, other gifts were added to those of bread and wine—as corn, oil, wax, honey, eggs, butter, fruits, lambs, fowl, and other animals; and eventually equivalents in money or other objects of value. The last-named class of offerings, however, was not so commonly made upon the altar and during the public liturgy, as in the form of free gifts presented on the occasion of other ministerial services, as baptism, marriages, funerals, etc.; and from this has arisen the practice in the Rom. Cath. Chh. of the mass-offering, or *honorarium*, which is given to a priest with the understanding that he shall offer the mass for the intention (whence the honorarium itself is often called an ‘intention’) of the offerent. In some places, however, and among them in parts of Ireland, offerings ‘in kind’ are still in use, not indeed in the form of the ancient offertory, but in the shape of contributions of corn, hay, etc., at stated seasons, for the use of the parochial clergy. At weddings also, and in some places at funerals, offerings in money are made by the relations and friends of the newly married or of the deceased. In the Liturgy of the English Church, allusion is made to the practice of oblations, and some recent controversies have related to the revival of the ancient ‘offertory,’ which has found some advocates.—The O. is coming into use in non-prelatical churches in the simple form of a few dedicatory words recognizing and rendering the contributions of the congregation as their offering to God.

OFFICE.

OFFICE, n. *ôf'is* [F. *office*, office, worship—from L. *officium*, service, duty—from *opem*, aid, help; *facere*, to do: lt. *officio*]: settled duty; employment; business: peculiar use or function: act of kindness: formulary of worship or devotion; act of worship: house or apartment where commercial men, etc., transact their business; a counting-house: a function; position or function of one in public administration; department, as of state: PLU. the outlying parts, as stables, etc., of a mansion or palace. OFFICE-BEARER, one who holds an office. OFFICER, n. *ôf'fi-sér*, one authorized to perform some public duty (see OFFICE, in Law); one holding a place of authority in the army and navy.—*Military Officers* are combatant and non-combatant—non-combatant including Paymasters (q.v.), medical officers (see SURGEON, ARMY AND NAVY), Commissariat (q.v.) and other civil officers. The great divisions of rank are commissioned (see COMMISSIONS), warrant, and Non-commissioned Officers (q.v.). Commissioned officers comprise all holding the rank of sub-lieut., or corresponding or superior rank. Divided by duties, they are Staff Officers (see STAFF), or Regimental Officers (see REGIMENT); divided by rank, General Officers (q.v.), Field-officers (q.v.), and troop or company officers. The last are captains, lieutenants, and sub-lieutenants, and, except in the cavalry, are unmounted.—See PROMOTION: ARMY: PURCHASE SYSTEM: WARRANT OFFICERS: NON-COMMISSIONED OFFICERS: also titles of the various ranks.—*Naval Officers* are commissioned, warrant, and petty officers. Commissioned officers are admirals, captains, commanders, lieutenants, and sub-lieutenants: see these titles. Warrant Officers (q.v.) are boatswains, carpenters, gunners, and one class of engineers. Petty Officers (q.v.) constitute an important portion of the management in a ship-of-war. OFFICER, v. to furnish or supply with officers. OFFICERING, imp. OFFICERED, pp. -*serd*: ADJ. furnished or supplied with officers. OFFICIAL, a. *ôf'fish'âl* [F.—L.]: pertaining to or derived from the proper office or authority; done by virtue of authority: N. one invested with office; a subordinate executive officer or attendant. OFFICIALLY, ad. -*lî*, by authority; by virtue of an office. OFFICIATE, v. *ôf'fish'î-ât*, to act by virtue of an office; to perform official duty for another, said of a clergyman: in OE., to give in consequence of office. OFFICIATING, imp.: ADJ. performing an office. OFFICIATED, pp. OFFICIOUS, a. *ôf'fish'ûs* [L. *officiôsus*, obliging]: unduly forward in interposing services; intermeddling; busy; in OE., doing good offices; kind. OFFICIOUSLY, ad. -*lî*. OFFICIOUSNESS, n. -*n'is*, the quality of being officious: undue forwardness. OFFICE COPY, an official copy: in law, copy made of a document by some officer of a court in whose custody the document is: in general such copies are receivable in evidence without further proof in the same court, but not in other courts except as some statute makes them evidence. OFFICE FOUND: see IN-QUEST OF OFFICE. OFFICIAL ASSIGNEE a public officer appointed to manage the estate of a bankrupt: where the

OFFICE.

law provides such an official, a bankrupt's estate vests in him as soon as an adjudication of bankruptcy is made. He is the manager of the property, and can sell the estate under the directions of the court in urgent cases, e.g., when the goods are perishable; but in general he is assisted in the management by the creditors' assignees selected from the body of creditors by the other creditors' votes. OFFICIAL MANAGER, an officer appointed to manage the winding up of the affairs of a joint-stock company. DIVINE OFFICE, the name popularly given to the CANONICAL HOURS (q.v.) prescribed to be read each day by bishops, priests, deacons, and sub-deacons in the Roman Cath. Chh.: see BREVIARY. The special portions assigned for any particular day constitute what is called the divine office for that day; and each person who is bound in virtue of his order to recite the Breviary, is obliged, under pain of sin, to read, not merely with the eye, but with distinct, though it may be silent, articulation, each and all these portions. The adjustment of the portions of the office of each day, the combination of the 'ordinary' portions which are read every day in common, with the parts 'proper' for each particular day, is a matter of considerable difficulty, and is regulated by a complicated system of RUBRICS (q.v.). HOLY OFFICE, applied popularly to the Inquisition; properly to *The Congregation of the Holy Office*, i.e., the 'Congregation' at Rome, to which the direction of the tribunal of the Inquisition at Rome is subject. This Congregation was established by Paul III. 1542, and its organization was completed by Sixtus V. It consists of 12 cardinals, a commissary, consulters, and qualifiers, whose duty it is to examine and report on each case for information of the cardinals. In the most solemn sessions of the Holy Office the pope himself presides in person. The Holy Office decides questions of heresy, inquires into crimes against faith, and judges ecclesiastical offenses, especially in administration of the sacraments. In the present condition of the papal court, its action is much restricted. See INQUISITION.—SYN. of 'officious': impertinent; meddling; active; meddling; forward.

OFFICE, in Law: duty and right to exercise a public function or employment, and to take the fees and emoluments belonging to it. It involves the idea of tenure, duration, fees or emoluments, and powers, as well as duty. An officer is one lawfully invested with an office. Every O. is considered public whose duties concern the public. The holding of O. at a fixed compensation creates no vested right in the incumbent; the law creating the O. and the compensation is in no sense a contract; the offices may therefore be abolished at any time by proper legislation, or the salary may be decreased, or the powers and duties of the O. may be curtailed, unless such legislation is expressly forbidden by the constitution. Offices cannot be bought or sold, nor are they subject to devise; in most states it is a penal offense to barter away for reward the compensation or a part thereof attached to the O., or to allow another not authorized by law to exercise the func-

OFFICE.

tions of the O., either directly or indirectly. Offices are either ministerial or judicial: ministerial, when the duties attached are definitely fixed and ascertained and do not involve the exercise of any judicial discretion; judicial when the duties require the exercise of judgment or discretion on the merits of the question presented: an example of the ministerial kind is a constable; the office of a judge is judicial. The same officer may exercise judicial and ministerial duties; e.g., a justice of the peace. This distinction is of importance on account of the nature of the responsibility attached to the two classes. An officer performing ministerial duties is always responsible for any neglect or violation of duty whereby injury is caused to others: an officer, exercising judicial functions and having jurisdiction of the matter on which he acts, incurs no liability for injuries, if he acts with good faith; but he will be civilly responsible if he acts wholly without jurisdiction, or exceeds his jurisdiction and has knowledge of the facts which constitute the defect of jurisdiction. Where a public O. is instituted by the legislature, implied authority is conferred on the officer to bring all suits which the proper and faithful discharge of his official duties requires. An officer *de facto* is one in possession of the O., and receiving the emoluments attached thereto, but whose title is not unquestionable; an officer *de jure* is one who has the legal right to the O., without necessarily having the actual possession of it. There can not be an officer *de jure* and another *de facto* performing the duties of the O. at the same time, but where the officer *de jure* is also officer *de facto*, the acts of another claimant will not protect third persons. A *de facto* officer can not be compelled to act and incurs no liability by his mere cessation of acting. The acts of some officers *de facto* will be effectual and valid even though they be afterward replaced by the officer *de jure*. Thus the judgments rendered by a judge acting as such, *de facto*, will not be set aside for that reason. The title to O. when in dispute, is generally tested by what are termed *quo warranto* proceedings. The tenure of O. is regulated by statute, and it is usual in the United States to fix a limit for eligibility on the age of incumbents; 70 years usually being the limit. In the absence of fraud or collusion, the acts of public officers, within the limits of the authority conferred on them and in performance of the duties assigned to them in dealing with third persons are the acts of the states. In the United States public officers are appointed by the pres. with the advice and consent of the senate, except that congress has power to vest in the pres. alone or in the heads of departments, the appointment of 'inferior officers.' The constitution is silent as to whether the consent of the senate is necessary to the removal of an officer by the pres; congress, in the trial for impeachment of Pres. Johnson, sustained by a very close vote, the right of the pres to act alone. The appointment and removal of a number of 'inferior officers' is now regulated by what is known as the 'Civil Service Reform' laws. A number of

OFFICINAL—OFFSET.

the states have similar statutes: see CIVIL SERVICE. Ambassadors (q.v.), public ministers, consuls (q.v.), and Supreme court judges, are specified by the constitution of the United States as not being 'inferior officers.' Each state has statutes regulating the appointment of its own officers; in the states most of the officers, especially the head officers, are elected by the people. The tendency has been, in the states, to curtail the power of appointment in the executive.

OFFICINAL, a. *ŏf-fīs'ī-nāl* [It. *officinale*: F. *officinal*, sold in the shops—from L. *officīna*, a shop where goods are sold]: kept and sold in shops, or ordered or expected to be kept and sold there. **OFFICINAL PLANTS**, those medicinal plants which have place in the pharmacopœias of different countries, and which are therefore sold—or some of their products or preparations of them—by apothecaries and druggists. The medicinal plants cultivated to any considerable extent all are officinal, but many not cultivated also are officinal: see MEDICINAL PLANTS.

OFFING, n. *ŏf'fing* [Eng. *off*, signifying distance from]: that part of the sea at a distance from the shore having deep water: **ADJ.** moving off shore; steering from land.

OFFSCOURING, n. *ŏf'skour-ing* [*off*, and *scour*—*lit.*, anything scoured off]: rejected matter; that which is vile or despised.

OFFSCUM, n. *ŏf'skūm* [*off*, and *scum*]: refuse matter; filth: **ADJ.** vile.

OFFSET: a perpendicular from a main line to an outlying point. Let AEF....B....D....C be a field with

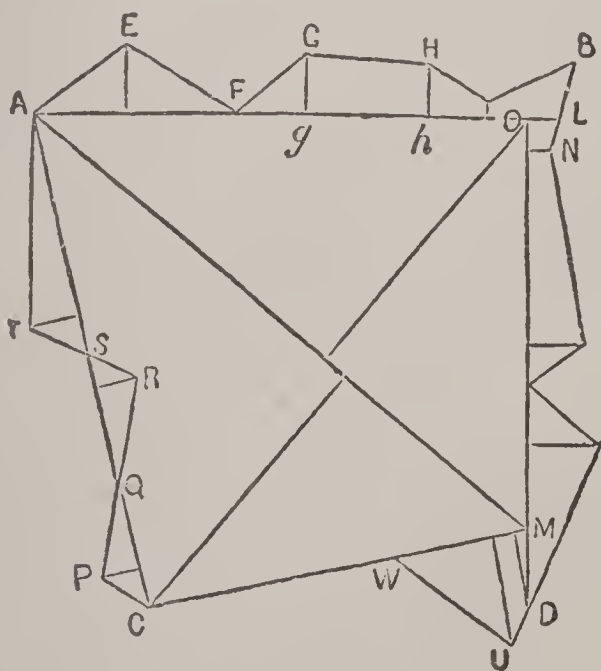


Fig. 1.

very irregular sides; take the points A, O, M, C at or as near the corners as convenient, the object being to inclose as much of the field as possible within the quadrilateral AOMC; and for this purpose it is sometimes necessary, as in the present case, to include a corner (as SRQ) which is

OFFSET.

outside the field. The area AOCD is found by means of the diagonal AM, and the perpendiculars on it from C and O. The area AEEFG....BL is found by dividing it into triangles and trapezoids by means of perpendiculars (to which the term *offsets* was originally applied, though it now denotes the irregular area before mentioned) from the corners E, G, H, etc. (see TRIANGLE: TRAPEZOID), and adding together the areas of the separate figures AEF, EFG, GHgh, etc. Similarly the areas of OLN....D and MDUW are found. To the sum of these must be added the areas of the triangles A'IS, Q'PC, diminished by the area of SRQ, and the result is the whole area of the field. If the offset have no distinct corners, as (fig. 2) ABLMN....OK, then the base AK is divided into equal parts by

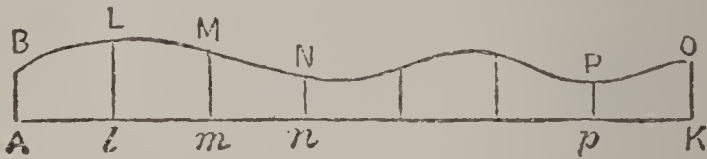
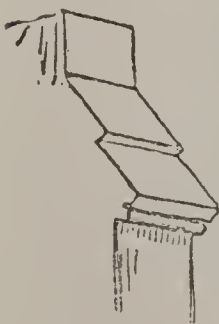


Fig. 2.

perpendiculars ABLl, Mm, Nn, etc., and the area of the offset is found approximately as follows: the whole offset = $ABLl + LlMm + MmNn + \text{etc.} + PpOK = Al \times \frac{1}{2}(AB + Ll) + lm \times \frac{1}{2}(Ll + Mm) + mn \times \frac{1}{2}(Mm + Nn) + \dots + pK \times \frac{1}{2}(pP + OK) = (\text{since the divisions of the base are equal}) Al \times \frac{1}{2} \{ AB + 2Ll + 2Mm + 2Nn + \dots + 2pP + OK \} = Al \times \left\{ \frac{AB + OK}{2} + Ll + Mm + Nn + \dots + Pp \right\}$; i.e., the area of an offset is found approximately by adding the intermediate perpendiculars to the semi-sum of the first and last, and multiplying the sum-total by the length of a division of the base, the divisions being equal; and the greater the number of perpendiculars, the nearer the result is to the true area.

OFFSET, *n.* *if s'et.* or **SET OFF** [*off*, and *set*]. sum or account or thing placed as an equivalent for another. In *building*, the splay or sloping part of a wall, etc., joining parallel surfaces when the upper face recedes from the lower. This frequently occurs on buttresses (see fig.). The *O.* is usually protected with dressed stones, having a projection or drip on the lower edge to prevent the rain from running down the wall. In *gardening*, a young shoot or bulb separated from the parent root and growing beside it, springing from the axils of its scales (see **BULB**): this growth exhausts the plant's strength, but serves for its propagation: the term is seldom applied to other than bulbous-rooted plants cultivated for



Offset.

beauty of flowers.—*O.* signifies also a terrace upholding a flat on a hillside. *O.* in *land-measuring* (see below): *V.* to set off as one account against another. **OFFSET-STAFF**, a measuring rod 10 links long, or 6 ft. 7·2 inches.

OFFSHOOT—OGDEN.

OFFSHOOT, n. *ǒf'shót* [*off*, and *shoot*]: anything arising from or growing out of another.

OFFSIDE, n. *ǒf'sīd* [*off*, and *side*]: the side to the right hand of the driver.

OFFSKIP, n. *ǒf'skīp* [*off*, and Dut. *-schap*; AS. *-scipe*, a suffix = Eng. *-ship*, as in *friendship*]: a term used by some writers on art to indicate that part of a landscape which recedes from the spectator into distance.

OFFSPRING, n. *ǒf'sprīng* [*off*, and *spring*]: children; descendants; that which is produced from something else.

OFFWARD, ad. *ǒf'wérđ* [*off*, and AS. *weard*, expressing direction]: in *nav.*, the situation of a ship which lies aground, and leans from the shore.

OFT: for **OFTEN**, which see.

OFTEN, ad. *ǒf'fn* [Icel. *opt*; Dan. *ofte*; Goth. *ufta*, often]: many times; repeatedly; not seldom. **OFT**, ad. *ǒft*, poetic for *often*. **OFTENTIMES**, or **OFTTIMES**, ad. frequently.

O'GAM: see **OGHAM**.

OGDEN, *ǒg'dēn*: city, cap. of Weber co., Utah, at the union of the Ogden and Weber rivers; on the Union Pacific, the Rio Grande Western, the Central Pacific, the Utah Central, the Ogden and Syracuse, the Echo and Park City, and the Utah and Northern railroads; near the Wasatch Mountains and 37 m. from Salt Lake City. It is on a great plain, 4,340 ft. above the ocean, 85 ft. above Great Salt Lake 6 m. distant. The city is 4 m. square, the streets cross each other at right angles, and, except the principal business thoroughfare, 132 ft., are 100 ft. wide. The streets are paved with asphalt, found in inexhaustible quantity in one of the mountains close by; they have broad walks and are well shaded. There are street railroads, light is supplied by gas and electricity, and there is a telephone service. There are 6 churches and a Mormon tabernacle; a good public-school system, various denominational schools; and the corner-stone of Utah Univ., which is to cost \$500,000 and be under Meth. Episc. management, was laid 1890, Aug. 5. There are 1 monthly, 1 semi-weekly, and 3 daily newspapers; 3 nat. banks (cap. \$350,000), 1 state bank (cap. \$100,000), and 1 savings bank; an opera-house; and 6 hotels. One of the finest systems of water-works in the region is to be completed during 1890. Among the fine buildings are the Chamber of Commerce, the Union depot, municipal building, opera-house, and a hotel which cost \$150,000. O. is the outlet for the products of an extensive and fertile agricultural, live-stock, and fruit-growing region, which will be increased by the largest irrigating canal in the world, on which 3,000 men are (1890) employed, which will open 500,000 acres of land to cultivation, and cost \$3,000,000. The city is the centre of extensive trade. Iron, copper, lead, silver, and gold are found in the vicinity; there are enormous quantities of coal; large deposits of manganese, fire-clay, kaolin, and mineral resin; and marble, granite, and sandstone of various shades and fine qualities are found in abundance. Salt,

OGDEN.

and various sulphates, borates, and bromides are obtained from the lake, and lime from the mountains, at very small expense. The Ogden river in its passage through the cañon falls about 550 ft. in a distance of 5 m., giving immense water-power. The manufacturing interests are varied, extensive, and rapidly increasing. The largest flour-mills in the region are here; brick, tile, and pottery ware are made in great quantities. Among the manufactures are lumber, woolen and knit goods, boots, shoes, cigars, and brooms. There are also canning establishments, 2 breweries, and a vinegar factory. On account of its fine climate and remarkably equable temperature, O. has become a favorite health resort. The waters of the famous hot springs are claimed to be wonderfully efficacious in certain forms of scrofula, rheumatism, and other diseases; while bathing in Great Salt Lake is highly invigorating. O. was settled by Mormons 1848, was incorporated 1859, and has recently had wonderful growth. It is said that in a period of 18 months the pop. has more than doubled, and that \$1,500,000 has been expended on private buildings within a year. Pop. (1870) 3,127; (1880) 6,069; (1890) 14,889; (1900) 16,313.

OGDEN, *ög'den*. AARON: 1756, Dec. 3—1839, Apr. 19; b. Elizabethtown, N. J.; son of Robert O., colonial patriot and statesman. Aaron graduated at Princetown 1773, and afterward taught school. He served in the revolutionary war as aide-de-camp to Lord Stirling and Gen. Maxwell, and accompanied Lafayette in his Virginia campaign 1781, receiving special commendation from Washington for gallant conduct at Yorktown. After the war, he studied law, and practiced successfully in his native state; holding, meanwhile, several important military and political appointments. He was U. S. senator 1801–03 and chosen gov. of N. J. 1812, Oct. 29. In 1806 he was one of the N. J. commissioners to settle the question of boundary and jurisdiction between N. Y. and N. J. He was commander-in-chief of the N. J. militia in the war of 1812, declining the appointment of maj. gen. U. S. A. He served as trustee of Princeton 1803–12 and 1817–39, receiving the degree LL.D. from that college 1816. He was pres. general of the Soc. of the Cincinnati from 1829 till his death in Jersey City.

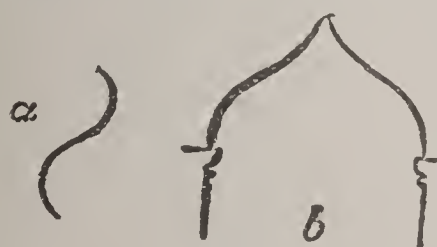
OGDEN, DAVID: 1707–1800, June; b. Newark, N. J. He graduated at Yale 1728, studied law in New York, and became the leader of his profession in N. J. He was chosen a member of the royal provincial council, 1751, Apr., served as judge of the superior court, and 1772 was appointed a judge of the supreme court, which position he held till the outbreak of the revolutionary war. His sympathy with the mother country compelled him to seek refuge in England, 1777, Jan., and in 1779 he became an active member of the board of refugees, consisting of representatives of the several colonies, and drew up a plan for their government in the event of their surrender to Great Britain. His own estates, valued at \$100,000, and those of other loyalists having been confiscated, he went to England

OGDENSBURG--OGHAM.

again, 1783, to urge their claims for compensation. He returned to the U. S. 1789, having secured an allowance for his property, and settled at Whitestone, Long Island, N. Y., where he passed the remainder of his life.

OGDENSBURG, *ög dēnz-bērg*: city and port of entry in St. Lawrence Co., N. Y.; on the St. Lawrence river, at the mouth of the Oswegatchie; 72 m. below Lake Ontario, and 4 m. above the rapids; it is about 175 m. n.w. of Albany, opposite Prescott, Canada, and is the terminus of the Rome Watertown and Ogdensburg, the Utica and Black River, and the Ogdensburg and Lake Chaplain railroads, the last being a division of the Vermont Central. The St. Lawrence is more than 2 m. wide at this point. Steam ferry-boats run between O. and Prescott, and O. is also headquarters for the Northern Transportation Co.'s line of 23 steamers connecting Chicago with O., and touching at other points on the great lakes. The commerce of O. is important, grain and lumber being chief sources of revenue. It has an immense grain elevator, and it is estimated that 10 000,000 bushels of grain pass through this port annually, from the west to New England. The annual lumber receipts are about 75,000,000 ft. The water-power is excellent, and is employed in the manufacture of flour, lumber, machinery, and leather. The city is level, regularly laid out, beautifully shaded, and lighted with gas: it has the Holly system of water-works. The principal public buildings are the U. S. post-office, custom-house and court-house, and the Rom. Cath. Cathedral. There are also 6 churches, 3 newspapers, a large hotel, a bank, an Educational Inst., and graded schools. O. was founded 1749, incorporated as a vill. 1817, and became a city 1868. Pop (1870) 10,076; (1880) 10,341; (1890) 11,662; (1900) 12,633.

OGEE, n. *ō-jē'* [F. *ogive*; It. *augivo*, the arch of a ceiling]: wave-like molding of two curves, one concave, the other convex (*a*); the union of the concave and convex in



Ogee.

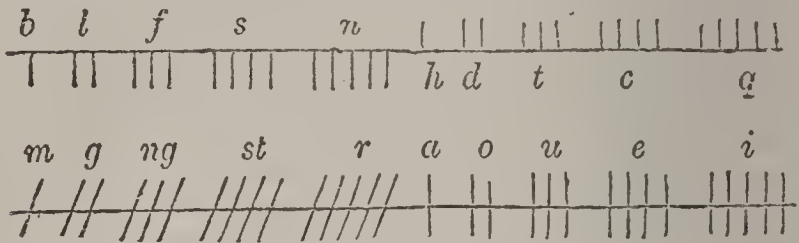
an arch or fillet; a cyma; contracted into O G. It is called (in Classic Architecture) *Cymatium* or *Cyma Reversa* (see **MOLDING**). The ogee is much used in Gothic architecture also. An arch having each side formed with two contrasted curves, an arch with a

double curve, is called an ogee arch (*b*). Figure *a* represents Hogarth's line of beauty.

OGHAM, n. *ög'hām*, or **OGAM** [Ir. *ogam* or *ogma*]: kind of shorthand writing or cipher, in use among the anc. Irish: see **CELTIC NATIONS**. The name Oghams was given to the letters or signs of a secret alphabet long in use among the Irish and some other Celtic nations. Neither the origin nor the meaning of the name has been satisfactorily explained. The alphabet itself is called *Bethluisnin*, or *Bethluis*, from its first two letters, 'b,' called 'beith'

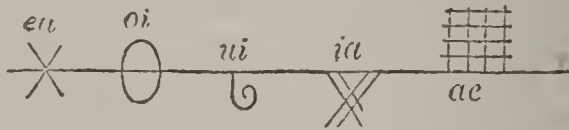
OGHAM.

(birch), and 'l,' called '*luis*' (quicken). Its characters are lines, or groups of lines, deriving their significance from their position on a single stem or chief line—over, under, or through which they are drawn either straight or oblique. In some cases the edge of the stone or other substance on which the Oghams are incised serves the purpose of the stem or chief line. About 80 different forms of the alphabet are known. The following is most commonly used:



Ogham Alphabet.

These seem to have been all the letters of the first O. alphabet. Five characters were afterward added to represent diphthongs:



The sign for the diphthong 'ea' is said to be the only one which has been observed on ancient monuments. It is added that the sign for 'ui' sometimes stands for 'y,' that the sign for 'ia' sometimes stands for 'p,' and that the sign for 'ae' stands also for 'x,' for 'ce,' for 'ch,' for 'ach,' and for 'uch.'

O. inscriptions generally begin from the bottom, and are read upward from left to right to the top, when they are carried over, and run down another side or angle. Most of those which have been read give merely a proper name with its patronymic, both in the genitive case. The stones on which Oghams are cut seem mostly to have been sepulchral. Oghams are most frequent in Ireland, where they are found both written on books and inscribed on stones, metals, or bones. The Oghams on stones are most numerous in the counties of Kerry and Cork. A few O. inscriptions on stones have been discovered in Wales—as at St. Dogmael's, in Pembrokeshire; near Margam in Glamorganshire; and near Crickhowel, in Brecknockshire. There are a few in Scotland, as on the Newton Stone and the Logie Stone in Aberdeenshire, on the Golspie Stone in Sutherland, and on the Bressay Stone in Shetland. One has been found in England—at Fardel, in Devonshire. Oghams have been observed on an ancient MS. of Priscian, which belonged to the famous Swiss monastery founded in the 7th c. by the Irish missionary, St. Gall (q.v.).

The difficulties of deciphering O. inscriptions have not been fully overcome. It is confessed by the most learned and judicious of O. scholars Charles Graves, D.D., of Trinity College, Dublin, that the nature of the character is such that it does not at once appear which, of four differ-

ent ways of reading, is the right one; that the words being written continuously, as in ancient MSS., there is great chance of error in dividing them; and that the Celtic names inscribed are generally Latinized in such a manner as not readily to be recognized.

The old school of Irish antiquaries contended that the Oghams were of Persian or Phœnician origin, and were in use in Ireland long before the introduction of Christianity. But this theory is now generally discarded, as not only unsupported, but as contradicted by facts. A comparison of the O. alphabet, with the alphabets of Persepolis and Carthage, shows that there is no likeness between them. The great majority of O. monuments, it has been observed, bear more or less distinct marks of Christian hands. Several are inscribed with crosses, as old, to all appearance, as the Oghams themselves. Many stand in Christian burying-grounds, or beside Christian cells or oratories. Some still bear the names of primitive saints. At least one is inscribed with a Christian name: and some of the inscriptions show undeniable knowledge of Latin. At the same time, it has been argued by one of the most learned of Celtic philologists, Whitley Stokes, that 'the circumstance that genuine Ogham inscriptions exist both in Ireland and in Wales which present grammatical forms agreeing with those of the Gaulish linguistic monuments, is enough to show that some of the Celts of these islands wrote their language before the 5th c., the time at which Christianity is supposed to have been introduced into Ireland.' It has been observed by Dr. Graves, on the other hand, that there are many points of resemblance between the Oghams of the Celts and the Runes of the Norsemen; and one Irish MS. asserts that the Oghams came to Ireland from Scandinavia. The O. is said to have been in use so recently as the middle of the 17th c., when it was employed in the correspondence between Charles I. and the Earl of Glamorgan.

The best account of Oghams is in papers in *Transactions of the Royal Irish Academy*, by Dr. Graves, now bp. of Limerick, IV. 70, 173, 183, 254; V. 234, 401; VI. 71, 209, 248, where also are papers of value on the same subject by Samuel Fergusson; and the *Catalogue of the Museum of the Royal Irish Academy*, 134-140; and Whitley Stokes's *Three Irish Glossaries*, 55-57, compared with Thomas Innes's *Critical Essay on the Ancient Inhabitants of Scotland* II. 440-466. See also Astle's *Origin and Progress of Writing*, Petrie's *Essay on the Round Towers of Ireland*, John Stuart's *Sculptured Stones of Scotland*, Ware's *Antiquities of Ireland*, and Brash's *Ogam-inscribed Monuments of the Gaedhil*. O. inscriptions are in the Museum of the Royal Irish Acad. at Dublin, in the Edinburgh Antiquarian Museum, and in the British Museum.

OGILBY, *ō g'īl-bī*, JOHN: 1600-1676, Sep. 4: b. Edinburgh. He went to London in early life, and eventually became a dancing-master. Under the patronage of Wentworth, Earl of Strafford, he was appointed master of the revels in Ireland. He built a theatre in Dublin but was ruined by the civil wars, and afterward returned to Eng-

OGIVE—OGLETHORPE.

land and studied at Cambridge. He published various translations in verse including one of Homer which Pope valued highly in his younger days. O. was more than 50 years of age when he took up the study of Greek for the purpose of making this translation, which was very popular, and was noted for typographical beauty. He was also appointed royal cosmographer, and published several vols. of a descriptive geography of the world. He again became master of the revels in Ireland at the restoration, but was ruined by the fire of London.

OGIVE, n. *ō-jīv'* [F.: see OGEE]: among the *French*, a pointed arch crossing another; the Gothic arch with its ribs and cross-springers, etc.

OGLE, n. *ō-gl* [Dut. *oogen*, to eye—from *ooge*, the eye; Ger. *äugeln*, to eye one slyly—from *auge*, an eye]: a side glance or look: V. to view with side glances to attract notice, or in fondness. OGLING, imp.: N. the act of viewing with side glances. O'GLED, pp. *-gld*. O'GLER, n. *-glēr*, one who ogles.

OGLESBY, *ō'gēls-bī*, RICHARD JAMES: b. Oldham co., Ky., 1824, July 25. He removed to Decatur, Ill., 1836; and applied himself to the carpenter's trade, farming and making rope till 1844, studying law in the mean time. He was admitted to the bar and began practice in Sullivan, Ill.; but the next year returned to Decatur, and as 1st. lieutenant of the 4th Ill. regt. served in the Mexican war, taking part in the investment of Vera Cruz and the battle of Cerro Gordo. On his return to Decatur 1847, he took a course of study at the Louisville Law School, and graduated 1848. He was employed in California mining 1849-51; and again returning to Decatur was elected to the state senate 1860, but resigned to accept the colonelcy of the 8th Ill. vols. He commanded a brigade at the capture of Forts Henry and Donelson, and for gallant conduct was promoted brig.-gen. of vols., 1862, March 21. A severe wound received at Corinth unfitted him for duty till 1863, April, but he had in the mean time been promoted to maj. gen. of vols., 1862, Nov., and placed in command of the 16th army corps. He resigned 1864, May, was gov. of Ill. 1865-69, and again elected 1872, but was chosen U. S. senator 1873, Jan. He was again gov. of Ill. 1885-89. D. 1899, April 24.

OGLETHORPE, *ō'g'l-thawrp*, JAMES EDWARD: 1696, Dec. 26—1785, July 1; b. London: son of Sir Theophilus O., of Godalming, Surrey. He entered Oxford 1714, but joined the army the same year, serving with distinction as aide-de-camp to Prince Eugene in the campaign against the Turks 1716-7, especially at the siege of Belgrade. He entered parliament as member for Hazlemere 1722, and became deeply interested in improving the condition of poor debtors in English prisons. Aiming not only to liberate the prisoners, but to provide an asylum for insolvent persons and for oppressed Protestants throughout Europe, he conceived the plan of establishing a colony in America between Florida and Carolina. A large sum was raised by subscription, parliament granted £10,000 (about \$48,600);

and 1732, June, the king granted to O. and 20 others, the territory between the Savannah and Altamaha rivers. The tract was named Georgia in honor of the king. O. arrived at Charleston with 150 settlers, 1733, Jan., and soon afterward the foundation of Savannah was laid. (For account of O.'s colonial career, see GEORGIA.) He returned to England finally, 1743; and 1745 was appointed maj.gen. and sent against the pretender. His dubious conduct led to his court martial 1746; but he was acquitted, and 1747 promoted lieut.gen.; he retired as gen. on half-pay 1765. He surrendered his Georgia charter to the British crown 1752, but his interest in colonial affairs was undiminished. When Gen. Gage returned to England 1775, the command of the British troops in America was offered to O., but he declined it unless he were authorized to make concessions. He was a man of more than ordinary culture, and his writings on colonial matters are of local historic value. He died at Cranham Hall, Essex, England.

OGLIO, n. *ō'li-ō*: same as OLIO, which see.

OGOBAI, *ōg'o bā*, or OGOWÉ, *ōg'o wā*: large river of w. Africa, between the Gaboon and Congo, entering the sea by many mouths, 400 m. n. of the mouth of the Congo, between s. lat. $0^{\circ}40'$ and $1^{\circ}20'$. Its delta is not less than 1,300 sq. m. in extent, and consists of a most complicated net-work of channels and creeks, with two main branches, the most northerly of which reaches the sea at Nazareth Bay; the other principal mouth, the Bango or Fernand Vaz, about 50 m. farther s., has its outlet at the lagoon of Cama or Ncomi. The researches of Du Chaillu, its first explorer, 1856 and 65; of Walker 1865 and 73; of Compiègne, Marche, and Dr. Lenz 1874, and 1875-78 of M. Savorgnan de Brazza and Dr. Bullay, have added to our knowledge of this region. About 60 m. inland, above the head of the delta, the O. flows for about 50 m. from the e., its average width about 2,500 yards. It then bends n. 15 m., and here occurs the junction of the Okanda river, from the n.e., with the Ngunie from the s.: the river is navigable from the sea to this junction. The bed of the main stream, the Okanda, is 800 to 1,000 yards wide above the confluence, with a series of rapids on its upper waters, 180 m. from the sea. In addition to a French commercial establishment on the lower river, there is a British and Hamburg station at Adelina Longa, below the Ngunie. This latter district is distinguished by numerous lakes, one of which, 15 m. long by 7 broad, is connected with the O. by three rivers. Lake Azingo, to the north, is connected with the O. by the river Koli. In 1875 M. de Brazza was at Lopé, and explored the Fan country; he then advanced to Doumé, 50 m. south of the equator, where the course of the river is from s.e. to the n.w. Interrupted by illness, he resumed his explorations 1877, Apr., advancing to the Poubara Falls, in $1^{\circ}45'$ s., where the O. is an insignificant stream. Travelling eastward into unknown country, he crossed the water-parting, and discovered the Alima, a hitherto unknown river, 150 yards wide, flowing e., and in

all probability a tributary of the Congo. The region between the O. and Alima is 50 m. across, and consists of hills of moderate height, with easy passes. The dense forests of the O. are the main haunts of the Gorilla (q.v.), and of several other anthropoid apes, among which are the Nest-building Apes (q.v.). South of the O. dwell the Ashira and Apingi tribes, the latter skilful weavers, though cannibals; between the O. and the Gaboon are the Fans, fully described first by Du Chaillu, who also are cannibals; and have been moving westward for some years, so that the whole Gaboon region is occupied by them. The Fans excel in smith-work, but have deteriorated since their contact with the whites. Next in importance to the Fans are the Bakalai, inhabiting the country around the confluence of the O. and the Ngunie. Among tribes on the upper waters are the Okota, Oseyba (cannibals), and the Okanda. The rise of the O. corresponds with the heaviest rainfall, which is in March and April, and again in Oct. and Nov. Inland, rain is more frequent than at the coast. The O. seems to gather most of its water from lands comparatively near the coast (200–300 m.) and not to depend greatly on more remote tributaries. The remarkable volume of its water is ascribed to its draining an extensive region under the equator where rains are in tropical abundance. Total length of the O. 500 or 600 miles.

OGRE, n. *ōgr* [Sp. *ogro*; F. *ogre*; O. Sp. *huergo*, the man-eating giant of fairy tales: It. *orco*, a surname of Pluto, any imaginary monster—from L. *orcus*, hell]: one of the imaginary monsters of nursery stories. OGRESS, *ōgrēs*, a female ogre; in *her.*, a ball or pellet of a dark color. OGREISH, a. *ōgr* *ish*, having the supposed character and appearance of an ogre.

OGYGES. *ōj* *ī-jēz* or *ō-jījēz*: earliest king of Attica and Bœotia named in Greek legend. In his time (according to Larcher. about B.C. 1759, a great flood took place, called the Ogygian Flood, which desolated all the lower districts of both countries, and destroyed their inhabitants. The different legends lead to the supposition that under O. an Egyptian colony came to Bœotia, and thence to Attica. From him Bœotia took the name of Ogygia. OYGIA, n. *ōjij* *ī-ā* [from *Oyggēs*, anc. Greek monarch whose history and reign are very obscure, hence anything dark or of doubtful origin]: genus of trilobites peculiar to the Llandello flags of the Lower Silurian period. Six species have been described. They were named in allusion to their obscure and remote origin, or from their being found in the earliest fossiliferous formations. OYGIAN, a. *ōjij* *ī-ān*, pertaining to Ogyges; term applied to the great deluge in the fabulous history of Greece: applied to anything dark, obscure, or of doubtful origin.



Ogygia Buchii.

OH, int. *ō* [see O]: an exclamation expressive of pain, sorrow, surprise, or dissent.

OHIO.

OHIO, $\bar{o}-h\bar{u}'\bar{o}$: state; one of the United States of America; 17th in order of admission into the Union, 4th under the federal constitution; ranking (1890) 1st in Lake Erie fisheries; 2d in petroleum; 3d in dairy products, coal, and value of real and personal property; 4th in population, value of manufactures, and expenditure for public education; 5th in value of mineral products; and 6th in railroad mileage; popularly known as the 'Buckeye state.' The name Ohio is Indian, meaning 'beautiful river.'

Location and Area.—O. is in lat. $38^{\circ} 23'$ — $41^{\circ} 58'$ n., long. $80^{\circ} 31'$ — $84^{\circ} 48'$ w.; bounded n. by Mich. and Lake Erie, e. by Penn. and W. Va., s. by W. Va. and Ky., w. by Ind.; extreme length n. to s. 210 m.; extreme breadth 195 m.; Lake Erie water-front 230 m.; Ohio river water-front 436 m.; 41,060 sq. m. (26,278,400 acres); cap. Columbus.

Topography.—Nearly all the state is a table-land or elevated plateau, with average height about 1,000 ft. above sea-level, lowest 433 ft., highest 1,540 ft. The Ohio river, which falls 230 ft. in 436 m., and many of its tributaries, have cut deep valleys in this plateau, exposing steep bluffs and narrow ravines in places. The Lake Erie and Ohio river drainage areas are divided by a ridge extending n.e. to w., from Trumbull co. to Mercer and Darke cos., with average height 600 ft. above the lake. This ridge forms a watershed, from which the surface slopes n. to Lake Erie and s. to the Ohio river. Lake Erie receives the waters of the Maumee, Sandusky, Huron, Vermilion, Portage, Black, Cuyahoga, Rocky, Chagrin, Grand, Conneaut, and Ashtabula rivers; and the Ohio river those of the Mahoning, Muskingum, Scioto, Little Miami, Great Miami, Walhonding and Tuscarawas (forming the Muskingum), and the Whetstone (chief affluent of the Scioto) rivers. The Ohio river is navigable for light-draught vessels to Pittsburg, Penn.; and the Muskingum, by means of slack-water improvements, from its mouth to Dresden, 95 m. The other rivers are commercially non-navigable. The Maumee river has long been noted as one of the best fish-producing streams in America. There are good harbors at Cleveland, Sandusky, and Maumee Bay; besides lake ports at Toledo, Conneaut, Ashtabula, Black River, Fairport, Port Clinton, Vermilion, Put-in-Bay, and Huron.

Climate.—The climate, in general, is healthful; in the n. portion the winters are cold, with abundant and long-lying snow, and summers and autumns are temperate and pleasant; in the s. portion the winters are short, mild, and with little snow, and the summers are long and hot; average mean temperature n., at Cleveland, $45^{\circ} 87'$, and s., at Portsmouth, $55^{\circ} 83'$; mean annual rainfall, Cleveland 38.43 in., Portsmouth 38.32. The changes in temperature are frequent and extreme, but the constantly varying winds greatly lessen the duration of the extremes. The annual mean temperature of the whole state is $50^{\circ} 1'$; and mean precipitation 39.35 inches.

OHIO.

Geology.—Nearly all the formations are secondary, and include limestone, lias, saliferous and ferriferous rocks, sandstone, and gray wacke, all in horizontal strata. The oldest rock in the state is the Cincinnati limestone, of Lower Silurian age, and allied to the Trenton and Hudson groups of N. Y. It extends from the Wine Islands, in Lake Erie, into Ky., where it underlies the blue-grass region, and into Tenn.; and is composed of limestone, marl, and clay, with great variety of fossil remains. Near the Cincinnati limestone are the Clinton and Niagara limestones, the former yielding iron ores in Muskingum co., and the latter excellent lime. The Salina group, prominent at Syracuse, N. Y., is exposed at Sandusky, and bears gypsum and fine building-stones. The water-lime, developed on the Wine Islands and in the w. part of the state, supports the Oriskany sandstone. There are two belts of carboniferous limestone—one extending from Sandusky into Pickaway co., the other from Toledo to Van Wert, near the Ind. line; and this limestone forms the surface-rock of Kelley's Island (q.v.). This formation yields excellent building-stone, such as the state-house was constructed with, besides lime and remains of large ganoid fishes; and is quarried at Kelley's Island, Columbus, Sandusky, Delaware, and elsewhere. Huron shale is found in the n.w. part of the state, and in a belt averaging 15 m. wide from Lake Erie to the Ohio river, and is the source of the petroleum and natural gas of Penn. and parts of O. Erie shale borders the lake-shore from Penn. to the Vermilion river. The carboniferous system underlies nearly the e. half of the state, and rests on the shales and sandstones of the Waverley group, with the Berea grit for a substratum. The latter sandstone is quarried at Amherst, Berea, Buena Vista, and Independence, for grindstones and building-purposes. The coal measures, showing strata of shale, sandstone, limestone, coal, fire-clay, and iron ores, occupy the s.e. third of the state, underlie 20 cos., cover 12,000 sq. m., have a maximum thickness of 1,200 ft., and are divided into the lower (400 ft.), barren (400 ft.), and upper (300–600 ft.) measures. The lower measure contains block coal, and the upper measure 9 seams of Strawbridge cannel, cannel, Leetonia coke, and coking coals, while the barren measure contains 3 seams of only local importance. An area of nearly 12,000 m. in the s. part of the state contains the second great mineral staple, iron, representing the ores of the buhrstone stratum of the lower coal measures, considered the most important spathic ores in the United States, the black band of the barren measures, and its subordinates, mountain and kidney. Drift deposits cover nearly two-thirds of the state, and contain clay, sand, gravel, and large boulders.

The economic properties of O. are coal, wholly in Mahoning, Columbiana, Stark, Holmes, Tuscarawas, Carroll, Jefferson, Harrison, Belmont, Guernsey, Coshocton, Muskingum, Perry, Noble, Morgan, Monroe, Washing-

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ton, Athens, Meigs, Gallia, and Lawrence, and partly in Jackson, Trumbull, Portage, Geauga, Summit, Medina, Licking, Wayne, Hocking, Fairfield, Scioto, Vinton, Knox, Richland, and Ashland cos.; iron in Lawrence, Gallia, Jackson, Meigs, Vinton, Athens, Hocking, Perry, and Licking cos.; white limestone in Montgomery and adjacent cos.; petroleum in Trumbull, Lorain, Medina, and Noble cos.; hydraulic cement in Belmont, Lucas, and Auglaize cos.; the limestones and sandstones above mentioned; salt; mineral springs; and marl.

Zoology.—Nearly all the wild animals of the earlier time, deer, wolf, bear, raccoon, and fox, have become extinct; game-birds are abundant in season; the song-birds and birds of prey common to N. Y. and Penn. are found here also; numerous reptiles, similar to those in the Mississippi valley, are encountered; and small game is still hunted in various parts. The waters of the state are especially rich in fish. The chief rivers are stocked with trout, black bass, perch, roach, and many other fresh-water fish; and Lake Erie is prolific in the delicious lake whitefish and salmon. The principal fishing-ports are Sandusky, Toledo, Cleveland, Huron, Conneaut, Put-in-Bay, and Ashtabula; and much attention is given to the manufacture of caviare and smoked sturgeon.

Agriculture.—The greater part of the soil is arable, more than nine-tenths of it being in the farm acreage. The 'Western Reserve,' in the n.e., is adapted particularly to dairying and stock-raising; the s.e. part to wool-growing; the bottom-lands of the Scioto, Miami, and Muskingum rivers to Indian corn; the Muskingum and Maumee valleys to wheat; the islands and shores of Lake Erie to viniculture; and the 'Western Reserve' and Miami valley to apples. The forests contain evergreens, pines, hemlock, tamarack, cypress, spruce, 8 varieties of oak, 3 varieties of ash, 4 varieties of maple, 4 varieties of elm, sycamore, cottonwood, 5 varieties of thorn, dogwood, ironwood, black walnut, 5 varieties of poplar, honey locust, box elder, red and black cherry, mulberries, redbud, and Ky. coffee-tree. The indigenous medicinal plants include ginseng, gentian, valerian, mandrake, cohosh, blood and snake roots, and calumba.

The following comparison of the census reports of 1880 1890 and 1900 shows a general decrease in agricultural interests:

Farms.	1880.	1900.
Number of farms.....	247,189	276,719
Acreage of lands.....	24,529,226	24,501,985
Value of farms.....	\$1,127,497,353	\$1,036,615,180

The subjoined table shows the acreage, production, and value of the principal farm crops in the calendar year 1900, also the production in 1880.

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Crop.	1880.		1902.		
	Acreage.	Yield.	Acreage	Yield.	Value.
Corn.....	3,281,923	111,877,124*	3,200.22.	121,608,512*	\$51,076,575
Wheat.....	2,556,131	46,014,869*	2,124,750	16,333,319*	25,796,699
Oats.....	910,308	28,064,505*	1,129,191	46,409,791*	14,851,133
Rye.....	29,400	389,221*	15,587	272,772*	244,569
Potatoes.....		12,719,215*	165,252	15,533,688*	6,834,823
Tobacco.....	34,676	34,755,235+	62,910	55,709,865+	2,899,691
Hay.....		2,210,932+	2,768,547	3,959,022+	40,382,024
Total.....			9,466,510		142,984,514

The number of animals reported on the farms on Jan. 1, 1903, was as follows:

Animals.	Number, 1880.	Number, 1903.	Value, 1903.
Horses.....	736,495	793,992	\$63,404,695
Mules.....	19,411	15,515	1,173,720
Milch cows.....	767,043	767,516	25,681,085
Oxen and other cattle.....	1,093,143	1,190,024	26,467,081
Sheep.....	4,902,486	3,447,786	10,743,991
Swine.....	3,141,333	2,756,096	24,115,840
Total.....	10,679,964	8,970,929	\$151,586,412

Manufactures.—The following table gives a comparison of the manufacturing industries in 1890 and 1900, and details of the principal ones, arranged in the order of value of output, in 1900, according to the revised census returns. In 1890 the total capital employed in manufacturing was \$402,793,019, and in 1900, \$605,792,266.

Principal industries.	Estab.	Hands employed.	Wages paid.	Cost of materials.	Value of products.
			\$	\$	\$
All industries 1900	32,398	315,569	153,955,330	447,849,677	\$32,438,113
“ “ 1890	28,673	331,548	158,768,883	341,016,454	641,688,064
Increase.....	3,725	14,321	4,4813,503	106,83,213	190,757,049
Iron and steel....	107	33,677	19,730,469	91,329,307	138,935,256
Foundry and machine shop products.....	861	41,799	20,563,268	31,578,934	72,399,632
Flour and grist-mill products..	1,150	2,438	1,220,398	31,826,756	37,390,367
Lumber and timber products...	2,054	8,539	3,298,668	11,285,923	20,790,854
Slaughtering and meat-packing, wholesale.....	60	1,700	775,288	17,006,794	19,609,304
Liquors, malt....	112	3,464	2,292,652	4,277,812	18,522,639
Boot and shoe factory products.....	81	12,718	3,989,744	11,025,493	17,920,854
Clothing, men's, factory products.....	539	6,521	2,143,619	9,075,429	16,593,824
Carpentering....	1,135	5,242	2,918,959	6,916,660	14,046,476
Agricultural implements.....	78	6,852	3,271,163	6,052,515	13,975,268

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Principal industries.	Estab.	Hands employed	Wages paid.	Cost of materials.	Value of products.
Liquors, distilled.	26	335	\$179,157	\$1,438,507	\$12,447,268
Printing and pub. new-papers	837	1,456	3,119,596	2,779,464	12,189,640
Pottery, terracotta and fire-clay products	248	11,870	5,000,846	3,229,385	11,851,223
Tobacco, cigars. and cigarettes..	1,129	9,048	3,016,072	3,717,825	11,239,824
Lumber and planing mill products	354	4,666	2,169,264	6,549,648	11,066,671
Bread and other bakery products	956	3,519	1,529,341	5,427,110	9,857,288
Furniture, factory products	165	6,723	2,621,895	4,042,083	9,514,764
Petroleum refining	9	1,008	551,692	6,177,048	8,396,977
Soap and candles.	55	1,427	572,301	5,049,219	8,156,069
Rubber and elastic goods	19	3,505	1,281,038	4,757,204	7,330,104
Masonry, brick and stone.....	441	4,006	2,198,980	2,676,464	7,148,133

Reports to the state commissioner of labor 1894 showed the following capital investments: Beer and ale, \$15,444.-461; agricultural implements, \$11,054,618; strawboard and paper, \$6,645,000; soap and candles, \$5,795,812; carriages and wagons, \$5,697,959; men's clothing, \$5,663,063; machinery, \$5,281,069; furniture, \$4,276,772; foundry and machine-shop products, \$4,071,130; railroad and street cars, \$3,675,000; boilers and tanks, \$3,453,973; sash, doors, and blinds, \$2,985,536; boots and shoes, \$2,931,844; and flour-mill products, \$2,437,974. In the fiscal year ending 1894, June 30, the collections of internal revenue on taxable manufactures were: Distilled spirits, \$7,776,459.36; tobacco, \$2,133,351.87; fermented liquors, \$2,457,787.23; oleomargarine, \$83,885.48; penalties, \$3,242.26—total, \$12,454,728.92. The same sources yielded \$12,477,148.01 in the year ending 1895, June 30, in which there were reported 2,028 cigar factories, with output of 406,437,865 cigars and 7,029,720 cigarettes; 238 tobacco factories, with output of 14,805,809 lbs. of plug, 609,465 lbs. of fine cut, 3,880,284 lbs. of smoking, and 8,494 lbs. of snuff; 22 grain and 20 fruit distilleries in operation; 8,493,517.38 gals. of spirits rectified, and 29,428,927 gals. gauged; and 2,633,067 bbls. of fermented liquors produced.

Mineral Resources.—Coal mining during the calendar year 1894 gave the state third rank in quantity of output, the total product being 11,909,856 short tons, valued at the mines at \$9,841,723. The worked area covered nearly one-third of the entire area of the state, or between 10,000 and 12,000 sq. m., and nearly all the product was loaded at the mines for shipment. The coal was all bituminous, and known as black, gas, cannel, and by the names of the leading producing localities, as Hocking valley, Mahoning valley, etc. The most productive counties were: Perry, 1,599,025 tons; Hocking, 1,520,868; Jackson, 1,511,950; Athens, 1,508,900; Belmont, 906,284; Guernsey, 891,859; and Jefferson, 851,200. During the year an average of 27,105 men were employed at the mines, who worked an average of 136 days. Eight coking plants had 363 ovens

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in operation, used 55,324 short tons of coal, and produced 32,640 short tons of coke, value \$90,875. The state had four petroleum districts, the Lima, Eastern Ohio, Mecca, and Belden, of which the first is the most important, and has been worked since 1885. This field extends into Indiana. All the oil in O. is found in the Trenton limestone. The total production 1894 was 16,792,154 bbls., value \$9,206,293, to which the Lima district contributed 13,607,844 bbls.; and the aggregate output 1876-94 was 111,782,343 bbls.; which gave O. second rank, Penn. and N. Y. being officially reported as a unit. Four geological formations supply natural gas for light and fuel: the Berea grit, O. shale, Clinton group, and Trenton limestone. In 1885-89 the value of the gas consumed rose rapidly from \$100,000 to \$5,215,669, and in 1889-94 it steadily decreased to \$1,276,100. Quarrying operations are confined to sandstone and limestone, which had outputs 1894 valued at \$1,777,034 and \$1,733,477 respectively. The state held first rank in production of sandstone, the greater part from Cuyahoga and Lorain counties. This stone supplies most of the demand in the United States for grindstones and other abrasives, using thus about one-sixth of its annual output. More than half is used for building purposes, about one-seventh for street work, and the remainder for bridge, dam, and railroad construction. In value of output of limestone the state held third rank, quarrying being done in 30 counties, and the production about equally divided between lime and building and road-making. The clay products 1894, reported from 968 plants, had an aggregate value of \$10,668,498, placed the state in first rank, and comprised the following: Common and pressed brick, \$2,136,691; ornamental brick, \$92,683; fire-brick, \$742,304; paving brick, \$928,948; drain tile, \$1,465,586; other tile, \$476,118; sewer pipe, \$3,311,895; terra-cotta work, \$19,000; and miscellancons, \$1,495,273. Of cement, 3 plants had output of 55,023 bbls. of American rock, value, \$83,598; and 3 others, 80,653 bbls. of Portland, value, loose, \$144,425. The great viaduct, water tunnel under Lake Erie, sewer plant, and nearly every important building in the city of Cleveland were constructed with American rock cement. The output of salt was 528,996 bbls., value, \$187,432, more than half being table salt; and the gypsum deposits near Sandusky yielded 20,827 short tons, value in commercial form, \$63,597. Of 12 mineral springs, 11 reported commercial sales of 125,450 gals. value \$256,000. In 1850-94, the state dropped from second to thirteenth rank in production of iron ores, though in the last year it held first rank in output of carbonate ore, its only production, with 58,493 long ton., value \$1 per ton. It ranked second in production of pig-iron, with 900,029 long tons, a decrease from 1,035,013 in 1891. In 1895, June 30, there were 33 furnaces in blast and 32 out.

Commerce.—O. had 1896 three ports of entry on Lake Erie, Cuyahoga (Cleveland), Miami (Toledo), and Sandusky, and two interior ports to which merchandise can be transported without appraisement at the port of reception, Cincinnati and

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Columbus, at which the imports of merchandise in the fiscal year ending June 30, 1895, had a value of \$3,255,943, on which \$1,446,101 in duty was collected, and the exports (at the lake ports only) \$1,746,082. In the calendar year 1895, the imports aggregated \$4,025,770; exports, \$1,928,817. The principal foreign trade was through the port of Cuyahoga, where the calendar year imports were \$1,904,964; exports, \$949,332. In 1902 the imports of merchandise at the ports of Cuyahoga, Miami, Sandusky, Cincinnati and Columbus aggregated \$10,327,895; exports (lake ports only) \$1,299,434. During the year ending 1895, June 30, the entrances at the lake ports were 195 American and 168 foreign sailing vessels (total tonnage, 79,203), and 664 American and 297 foreign steam vessels (103,785 tonnage), and the clearances were 252 American and 168 foreign sailing vessels (98,825 tonnage) and 721 American and 307 foreign steam vessels (178,482 tonnage). The value of lake vessels owned in the state was estimated at over \$20,000,000.

Transportation.—The first railroad in the state, the Mad River, was begun 1835 and completed 1842, with a total length of 36 m. The subsequent growth of mileage has been: 1850, 575; 1860, 2,946; 1870, 3,538; 1880, 5,792; 1890, 7,980; 1895, Jan. 1, 8,652, or with branches, sidings, etc., about 12,500 m. A detailed report at the close of 1893 showed: Capital stock, \$463,799,214; funded debt, \$480,399,730; total investment, 995,740,468; and cost of roads and equipments, \$947,740,897, which figures relate both to roads wholly within the state and those entering or passing through it. In 1894 there were 54 corporations operating 84 railroads, and the part within the state represented a capital investment of \$560,250,961, and expenditure for roads and equipments of \$544,671,604. The operating expenses were \$43,230,655; earnings from local traffic, \$60,140,831; income from operations, \$16,910,176; wages paid, \$30,546,709. During that year, the roads within the state carried 27,231,220 passengers and 59,639,559 tons of freight, and were the cause of 443 fatal accidents, 1 to a passenger, 107 to employes, and 335 to other persons. Five great trunk lines cross the state. Internal and interstate traffic is greatly promoted also by Lake Erie, the Ohio and other navigable rivers, and an admirable system of four canals constructed by the state and still operated by it. The first, the Ohio and Erie, connecting Cleveland, on Lake Erie, with Portsmouth, at the junction of the Scioto with the Ohio river, 309 m., was begun 1825, and cost \$4,645,204. This has 22 m. of feeders and side cuts. The next largest is the Miami and Erie, connecting Toledo, on Lake Erie, with Cincinnati, on the Ohio river, 246 m., or, with branches, 282 m., which cost \$7,463,694. The Hocking canal, a part of the Ohio, has a length of 56 m., and the Wallonding, 25 m. The total length of the canals is 697 m., and their total cost was \$14,688,666. The improvement of the Muskingum river between Marietta and Dresden increased the length of artificial navigation in the state to 792 m.

Finances.—The treasurer's report for the year ending 1895, Nov. 15, showed: Balance, \$802,264.91; receipts, \$3,227,-

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129.69; disbursements, \$3,795,721.22; balance, \$233,673.38. The funded state debt was \$1,791,665, and the irreducible debt in trust funds, \$4,648,609. Local debts aggregated \$98,383,260, consisting of co. debts, \$12,489,319; first and second class city debts, \$72,397,030; incorporated villages, \$6,436,741; townships, 959.662; and special school districts, \$6,100,508. On 1902, Nov. 15, the total bonded debt of O. was \$201,665. The total local debt, cities, counties, villages, towns, and school districts, amounted to \$106,368,137. The total assessed valuation in 1902 was \$1,990,858,388; state tax rate \$1.35 per \$1,000.

Banking.—In 1895, Oct. 31, there were 349 national banks, of which 248 were in operation and 101 in liquidation. The aggregate active banking capital was \$45,645,338; United States bonds on deposit, \$15,244,850; outstanding circulation, \$15,714,986; coin and coin certificates held, \$8,593,674; loans and discounts, \$123,647,616; deposits, \$108,951,484; reserve required, \$21,048,156; and reserve held, \$29,322,013. During the year ending 1895, Sep. 30, the United States clearing-houses at Cincinnati and Cleveland had total exchanges \$938,180,876, an increase of \$75,510,244 over the total of the previous year. The state banks, 1894, Oct. 1 (end of biennial term), numbered 95, and had combined capital \$8,589,540; deposits, \$28,797,337; resources, \$40,645,853; loans and discounts, \$38,154,258; and surplus and undivided profits, \$2,289,535. At same date there were 4 mutual savings-banks, with depositors, 58,778; deposits, \$23,949,245; loans and discounts, \$11,835,429; aggregate resources, \$26,221,782; and surplus and profits, \$2,272,537; and 1895, June 29, there were 13 stock savings-banks, with combined capital of \$1,686,200; depositors, 27,405; deposits subject to check, \$701,221; savings deposits, \$10,803,977; loans and discounts, \$11,109,881; resources, \$14,815,537; and surplus and profits, \$1,579,587. In 1902 O. had 308 national banks in operation with \$49,231,066 capital and \$74,825,873 surplus; 269 state banks, \$14,464,723 capital and \$3,188,796 surplus, 277 private banks, \$4,378,799 capital and \$1,167,021 surplus; 42 loan and trust companies, \$11,410,497 capital and \$1,950,827 surplus.

Building and Loan Associations.—According to a United States govt. report (1894), O. had 721 such associations, classified as local, 718; national, 3; serial, 26; permanent, 651; and terminating, 44. All associations reported 1,036,184 shares in force; assets and liabilities, \$67,626,374; loans on real estate, \$62,793,299; and dues and profits, \$52,053,450. Of the total number of associations, 719 reported 238,215 shareholders; 720 reported 741,384 shares free and 294,175 borrowed on; 690 reported 1,512 mortgages foreclosed, involving \$2,460,602, on which there was a loss of \$103,230; and 656 reported 62,188 houses, and 645 reported 6,657 other buildings acquired.

Religion.—According to the revised census report on statistics of churches, O. had 1890, 9,345 religious organizations, 8,857 church edifices (and 582 halls used for religious

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purposes), 1,215,409 communicants, and church property valued at \$42,138,862. The following table gives in detail the denominational statistics, omitting halls in column of 'edifices.'

Denominations.	Organizations	Edifices.	Members.	Value of church prop.
Advent.....	83	44	2,461	\$ 67,450
Reg. Bapt., N.....	616	585	57,685	2,543,888
Freewill Bapt.....	128	103	6,982	149,350
Primitive Bapt.....	101	100	3,235	102,690
Other Bapt.....	1	1	131	3,000
Brethren, River.....	15	9	448	14,100
Brethren, Plymouth.....	11	....	276	.....
Rom. Cath.....	586	515	336,114	7,395,640
Christadelphian.....	1	....	10	.....
Christians ..	273	247	25,052	392,500
Christ. Scientists.....	14	3	564	14,000
Christian Union.....	103	94	8,002	114,350
Church of God.....	75	66	3,352	99,550
Ch. of Jerusalem.....	13	8	657	103,500
Communitic Societies...	4	4	403	8,600
Congregational.....	247	253	32,281	2,044,525
Disciples of Christ.....	475	446	54,425	1,462,250
Dunkards	153	173	11,798	228,065
Evang. Assoc.	216	215	14,673	491,975
Friends.....	131	132	13,747	288,500
Ger. Evang. Prot.....	22	23	11,793	438,800
Ger. Evang. Synod.....	107	106	31,617	836,200
Jewish congregations. ..	34	19	8,889	703,225
Latter-day Saints.....	18	6	678	43,000
Lutheran Gen. Synod....	189	182	18,437	1,039,950
Lutheran Gen. Council..	118	108	15,915	483,100
Lutheran Syn. Confer....	54	55	15,440	409,975
Luth. Ind. Synods.....	227	228	39,777	1,074,072
Mennonites.....	77	60	5,988	77,515
Meth. Episc.....	2,340	2,296	210,650	8,749,970
Meth. Prot.....	234	226	18,931	441,000
African Meth.....	122	119	10,533	332,050
Other Meth.....	192	72	2,623	77,800
Moravians.....	6	6	822	37,400
Presb., N.....	618	636	82,444	5,754,350
United Presb	136	136	14,710	697,550
Welsh Calvinist.....	31	33	2,463	111,575
Cumberland Presb.....	22	22	1,602	60,500
Associate Presb.....	4	3	77	6,800
Ref. Presb.	17	19	1,311	92,100
Prot. Episc.....	169	186	17,711	2,103,487
Reformed	299	288	31,255	1,155,875
Salvation Army.....	30	1	655	875
Spiritualist	25	2	2,174	3,350
Theosophical Soc.....	2	....	52	.....
United Brethren.....	995	927	53,500	1,436,810
Unitarian	9	3	907	80,000
Universalists ..	1	91	4,961	344,800
Ind. Congregations.....	55	6	298	22,800

The state has a Rom. Cath. archdiocese, Cincinnati, and two dioceses, Cleveland and Columbus, and two Prot. Episc. dioceses, Ohio and Southern Ohio. At the seventh international Sunday-school convention held in St. Louis, 1893, Aug. 30 to Sep. 2, there were reported in O., 7,251 Sunday schools, 96,201 officers and teachers, and 641,118 scholars—total members, 737,319.

Education.—Official reports for 1895 showed: Number of children of school age in the state, 1,159,258; enrolled in the public schools, 817,490; in average daily attendance, 593,465; number of whole-year teachers, 17,320; amount

paid to teachers for salary, \$7,907,860; new school buildings erected during the year, 275; cost of same, \$1,246,376; and value of public school property, over \$40,000,000. The receipts for school purposes during the year aggregated \$13,733,102, from the following sources: taxation, \$11,422,551; irreducible school fund and other property held by the state for the schools, \$251,569; and sales of bonds and other sources, \$2,058,981. There were 40 universities and colleges of liberal arts, which had a total of 905 professors and instructors; 12,086 students in all departments, of whom 8,116 were males and 3,970 females; 357,693 bound volumes in the libraries; \$6,652,697 in productive funds, which yielded an income of \$360,459; \$543,247 in gifts during the year; and \$974,295 in total income. The value of all scientific apparatus and libraries was \$737,050, and of grounds and buildings, \$6,652,697. Other classified institutions were 294 public high schools; 44 endowed academies, seminaries, and other private secondary schools; 7 colleges for women exclusively; 13 schools of theology, 2 of law, 12 of medicine, 1 of dentistry, 3 of pharmacy, 1 of veterinary medicine; a training school for nurses; a private and 2 public normal schools; 10 normal departments in colleges; and 27 commercial and business colleges.

The principal universities and colleges of liberal arts were: Buchtel College, Akron, chartered 1870 (Univ.); Mount Union College, Alliance, 1846 (Meth. Episc.), Rev. T. P. Marsh, D.D., LL.D., pres.; Ashland Univ., Ashland, 1878 (Unit. Brethren), J. M. Tombaugh, A.M., pres.; Ohio Univ., Athens, 1864 (non-sect.), Charles W. Super, LL.D., pres.; Baldwin Univ., Berea, 1856 (Meth. Episc.), Millard F. Warner, A.M., pres.; German Wallace College, Berea, 1864 (Meth. Episc.), C. Riemen Schneider, PH.D., pres.; St. Joseph's College, Cincinnati, 1871 (Rom. Cath.), Rev. James Rogers, c.s.c., pres.; St. Xavier's College, Cincinnati, 1831 (Rom. Cath.), Rev. A. J. Burrowes, s.j., pres.; Univ. of Cincinnati, 1870 (non-sect.), P. V. N. Myers, L.H.D., dean; Calvin College, Cleveland, 1883 (Ref.), H. J. Ruetenik, D.D., pres.; Western Reserve Univ., Cleveland, 1836 (non-sect.), Charles F. Thwing, D.D., pres.; Capital Univ., Columbus, 1850 (Luth.), C. H. L. Schuette, A.M., pres.; Ohio State Univ., Columbus, 1870 (non-sect.), J. H. Canfield, LL.D., pres.; Ohio Wesleyan Univ., Delaware, 1844 (Meth. Episc.), J. W. Bashford, D.D., pres.; Findlay College, Findlay, 1882 (non-sect.), Rev. William N. Yates, A.M., pres.; Kenyon College, Gambier, 1824 (Prot. Episc.), Theodore Sterling, LL.D., pres.; Twin Valley College, Germantown, 1887 (non-sect.), Orvon G. Brown, pres.; Denison Univ., Granville, 1831 (Bapt.), D. B. Purinton, LL.D., pres.; Hillsboro College, Hillsboro, 1854 (Meth. Episc.), C. F. Enyart, A.M., pres.; Hiram College, Hiram, 1867 (Christ.), Ely V. Zollars, LL.D., pres.; Marietta College, Marietta, 1835 (non-sect.), J. W. Simpson, D.D., LL.D., pres.; Franklin College, New Athens, 1825 (non-sect.), W. A. Williams, D.D., pres.; Muskingum College, New Concord, 1837 (Unit. Presb.), Jesse Johnson, A.M., pres.; Oberlin College, Oberlin, 1833 (non-sect.), William G. Ballentine.

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D.D., LL.D., pres.; Miami Univ., Oxford, 1809 (non-sect.); William O. Thompson, D.D., pres.; Richmond College, Richmond, 1835 (non-sect.); George W. McMillan, D.D., pres.; Rio Grande College, Rio Grande, 1876 (Free Bapt.); Rev. John M. Davis, PH.D., pres.; Scio College, Scio, 1866 (Meth. Episc.), W. G. Compher, PH.D., pres.; Wittenberg College, Springfield, 1845 (Luth.), Samuel A. Ort, D.D., LL.D., pres.; Heidelberg Univ., Tiffin, 1850 (Ref. in U. S.), John A. Peters, D.D., pres.; Urbana Univ., Urbana, 1850 (New Church), Thomas F. Moses, M.D., pres.; Otterbein Univ., Westerville, 1847 (Unit. Brethren), Thomas J. Sanders, PH.D., pres.; Wilberforce Univ., Wilberforce, 1856 (Meth., Episc.), S. T. Mitchell, LL.D., pres.; Wilmington College, Wilmington, 1870 (Friends), James B. Unthank, M.S., pres.; Univ. of Wooster, Wooster, 1866 (Presb.), Sylvester F. Scovel, D.D., pres.; and Antioch College, Yellow Spring, 1852 (non-sect.), Daniel A. Long, D.D., LL.D., pres.

Of all universities and colleges of liberal arts, 6 were for males only, 7 for females only, and 32 for both sexes. The colleges for women were: Bartholomew English and Classical School and Cincinnati Wesleyan College, both in Cincinnati; Glendale Female College, Glendale; Granville Female College and Shepardson College, both in Granville; Oxford College, Oxford; and Lake Erie Seminary, Painesville. These combined had 108 professors and instructors; 1,004 students of all grades; 11,100 bound volumes in the libraries; \$21,000 receipts from gifts in the year; \$148,083 in total income; \$109,132 in productive funds; and \$685,000 invested in grounds and buildings. The schools of theol. (13) were: Theol. Dept. of German Wallace College; Hebrew Union College, Cincinnati, chartered 1873, Isaac M. Wise, pres.; Lane Theol. Seminary, Cincinnati, 1828 (Presb.), A. C. McGiffert, D.D., pres.; St. Mary's Theol. Seminary, Cleveland, 1849 (Rom. Cath.), N. A. Moes, D.D., pres.; German Lutheran Seminary, Columbus, 1830, Rev. M. Loy, D.D., pres.; Union Biblical Seminary, Dayton, 1871 (United Breth.), G. A. Funkhouser, D.D., pres.; Theol. Seminary of the Prot. Episc. Church in the Diocese of O., Gambier, 1824, H. W. Jones, D.D., pres.; Dept. of Theol., Oberlin College (Congl.); Wittenberg Seminary, Springfield; Heidelberg Theol. Seminary, Tiffin, David Van Horne, D.D., pres.; St. Charles Borromeo Seminary, Carthage (Rom. Cath.), Theopistus Nistrone, pres.; Theol. Department, Wilberforce Univ., David A. Payne, D.D., LL.D., pres.; and United Presb. Theol. Seminary of Xenia, 1794, James Harper, D.D., pres. These had a total of 67 professors and instructors and 462 students, of whom 114 were in graduating classes. The regular schools of medicine (8) were: Cincinnati College of Medicine and Surgery, chartered 1851; Medical College of Ohio, Cincinnati, 1819; Miami Medical College, Cincinnati, 1852; Medical Dept. of the Univ. of Wooster, Cleveland, 1864; Medical Dept. of Western Reserve Univ., Cleveland, 1842; Columbus Medical College, 1875; Starling Medical College, Columbus, 1847; Woman's Medical College, Cincinnati; and Toledo

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Medical College, 1883. Together these had 95 professors and instructors and 867 students, of whom 182 were in graduating classes. There were also two eclectic schools: American Eclectic Medical College, Cincinnati, 1879, and Eclectic Medical Institute, Cincinnati, 1845, aggregating 28 instructors and 288 students; two homœopathic schools: Pulse Medical College, Cincinnati, 1871, and Homœopathic Hospital College, Cleveland, 1849, aggregating 43 instructors and 154 students; one dental school: Ohio College of Dental Surgery, Cincinnati, 1844, with 11 instructors and 121 students; 3 pharmaceutical schools: Cincinnati College of Pharmacy, School of Pharmacy, State Univ., and School of Pharmacy, Scio College, with 25 instructors and 151 students; a school of veterinary medicine, connected with the State Univ., with 13 instructors and 11 students; and a training-school for nurses in Cincinnati, with 74 students. Public normal schools in Cincinnati, Cleveland, and Wauseon had a teaching staff of 26, students in training courses 518, and in graduating classes 64. A private school, the Ohio Normal Univ., in Ada, had a teaching staff of 33, students in normal course 1,109, in graduating class 103, and in non-professional course 1,725. Normal training was also given in Buchtel, Defiance, Hillsboro, Hiram, Marietta, Muskingum, and G'endale Female Colleges, and in Ohio, Heidelberg, and Wilberforce Universities, which together had 333 Normal students. The State Agricultural and Mechanical College, a part of the State Univ., had a faculty of 57; students 458; land under cultivation, 170 acres, valued at \$68,000; and special buildings and equipments valued at \$450,000.

Libraries.—According to the govt. report on public libraries in the United States of 1,000 vols. and upward each (1891), O. had 193 libraries, containing 1,320,099 bound vols., and 171,977 pamphlets. The libraries comprised 39 general; 37 school; 47 college; 12 college society; 5 law; 9 theological; 7 medical; 7 public institution; 1 state; 4 Y. M. C. A.; 12 social; 5 scientific; 3 historical; 2 I. O. O. F.; 1 mercantile; 1 historical and scientific; and 1 historical and theological.

Illiteracy.—In 1880 there were 2,399,367 persons 10 years old and upward enumerated, of whom 86,754 were unable to read and 131,847 unable to write. The whites unable to write numbered 115,491. The percentage of total illiterates was 5.5; of native white illiterates 4.3; and of foreign white illiterates 8.4. In 1890 the number 10 years old and upward enumerated was 2,858,659, of whom 149,843 were classified as illiterates, or 5.2 per cent. Of 2,789,479 whites, 132,244, or 4.7 per cent. were illiterates; of native whites 82,673, or 3.5 per cent., and of foreign whites 49,571, or 11.1 per cent., were so classified. The colored population of same age limit numbered 69,180, of whom 17,599, or 25.4 per cent., were illiterate.

Charitable and Reformatory Institutions.—These include the State Institution for the Education of the Deaf and Dumb, at Columbus; Public School for the Deaf, Cincinnati; State Institution for the Education of the Blind, Columbus; State Institution for Feeble-minded Youth, Col-

umbus; State Reform Schools, Delaware and Lancaster; State Asylums for the Insane, Athens, Cleveland, Columbus, Dayton, Massillon, and Toledo; Soldiers' and Sailors' Home, Sandusky; Soldiers' and Sailors' Orphans' Home, Xenia; and Working Home for the Blind, Iberia. During the year 1894 the state expended a total of \$4,175,914 for charitable and reformatory purposes.

History.—The territory and vicinity of the present state of O. were inhabited at one time by tribes of Indians who exhibited in their mounds and fortifications a higher state of intelligence than did almost any other tribe of which memorials or definite information has been preserved. The mounds that they erected in the valley of the Scioto river attracted the attention of the American archaeologists, Ephraim George Squier and Edwin Hamilton Davis, M.D., and their work 1836-47 was greatly encouraged by Daniel Webster, who regretted the rapid disappearance of these antiquities. Nearly 100 groups of earthworks were surveyed and about 200 mounds were opened at the expense of Squier and Davis, the results forming the largest collection of mound relics ever made in the United States. Had Webster's suggestion been adopted, that a society be formed to purchase and preserve what he believed to be the most remarkable works of the mound-builders, this unique collection would never have been permitted to leave the country and become a distinct feature of the Blackmore Museum in Salisbury, England. A subsequent collection is preserved in the American Museum of Natural History in Central Park, New York. An account of the first explorations, prepared by Squier, forms the first vol. of the *Smithsonian Contributions to Knowledge* (1848), under the title, *Ancient Monuments of the Mississippi Valley*. It is believed that the Indians who built these mounds were succeeded by other and entirely distinct tribes, resembling in many essentials the contemporary Indians in N. Y. and Penn., and that it was this second family that La Salle met 1680, when he made the first white man's exploration on record in this region. His party established numerous trading-posts through the O. valley; and though there is no evidence to indicate that they then attempted any permanent settlements, the French govt. claimed possession of the region because of the nationality of the explorers. Counter-claims were made by the English, based on cessions by James I. to Va. (1611), of all the present territory of O. s. of lat. 41° n., and by Charles II. to Conn. (1662), of all the territory north of that line. Under these claims, surveyors were sent out, posts for trade with the Indians were established, and a number of settlements were planted. Jealousies between the French and English soon sprang up; the French commandant at Detroit warned all English settlers to retire from the region n. of the Ohio river 1749; the English failed to dislodge the French in the war 1755; and the French held possession till the treaty of Paris 1763 gave

to Great Britain all the territory held or claimed by France in the n. and w., as far as the Mississippi river. After the close of the revolutionary war, this whole territory was claimed in parcels by Va., Conn. (quoting the above cessions), Mass., and N. Y.; and the disputes were settled (1800) by each claimant ceding to the federal govt. its alleged rights in the great tract, excepting that Va. and Conn. reserved the ownership of about 3,700,000 acres each, the tract of Va. including the region of the falls of the Ohio, and now forming part of Ind., and that of Conn. becoming known as the 'Western Reserve.' In 1788, Apr., a colony from New England founded Marietta, and, in Dec. following, a settlement was made on the site of Cincinnati. Indian depredations retarded the development of the territory 1792-99. In the latter year the federal govt. organized the whole region as the Northwest Terr.; 1800, May 7, the terr. of O. was organized; 1802, Nov. 29, the first state constitution was adopted; and 1803, Feb. 19, the state was admitted to the Union. The state capital was Chillicothe 1800-10, Zanesville 1810-12, Chillicothe 1812-16, and Columbus since. The first constitution was in force till 1851, when an amended one was ratified; and this is still the law of the state, a new constitution framed 1873 being rejected by the people 1874. The movement 1821 for internal improvements, which resulted in the construction of the state canals and the early railroads, made the state accessible from all important points, and marked the real beginning of its prosperity. Geological surveys were made 1837-8, 1869, and 1874. During the war with England 1812-14, O. was concerned in Com. Perry's great victory over the British at Put-in-Bay, Lake Erie; and during the civil war the state was twice raided by the Confederates, and it furnished 313,180 men for the Union armies.

Government.—The executive authority is vested by the constitution (1851) in a gov., elected for two years, salary \$8,000 per annum; lieut.gov., elected at the same time and for the same term; sec. of state; treas.; atty.gen.; auditor; adjt.gen.; commissioner of common schools; supt. of insurance; sec. of agriculture; and commissioner of labor statistics—all but the auditor (four years) and school commissioner (three years) being elected for two years. The gov. has a very limited power of appointment, and no veto power. The lieut.gov. is *ex officio* pres. of the senate, has a casting vote only, and succeeds the gov. in case of the death, resignation, impeachment, or other disability of the latter. All vacancies in offices below that of lieut.gov. may be filled by appointment by the gov., till the next general election. The legislative authority is a general assembly, comprising (1896) a senate of 37 members and a house of representatives of 112 members, each elected for two years, salary \$600 per annum and 12 cts. mileage. The constitution empowers the gov., auditor, and sec. of state to redistrict the state every 10 years. The as-

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sembly cannot grant special charters to corporations, but may provide for their creation by general laws. The constitution provides for biennial sessions; but adjourned sessions have been held in recent years, which made the meetings practically annual. In the election 1889, an amendment was adopted fixing the sessions as formerly provided. The judicial authority is vested in a supreme court of 6 judges, elected for six years, so classified that the term of one expires each year; a dist. court of one judge of the supreme court and the judges of the court of common pleas for the dist. in which the court is held; a court of common pleas originally composed of 3 judges, elected for 5 years, in each of the 10 districts into which the state is divided; a probate court of one judge, elected for 3 years, in each county; superior courts established under constitutional authority in certain large cities; local police courts; and justices of the peace. The common law of England is the basis of the civil law in the state, the criminal law is wholly statutory, there are no offenses recognized as common-law offenses, and there is no formal distinction between actions at law and in equity.

The successive govts., with their terms of service, are as follows:

Territory.

Arthur St. Clair.....1788-1802|C. W. Byrd (acting).....1802-3

State.

Edward Tiffin.....1803-07	Salmon P. Chase.....1856-60
Thomas Kirker (acting)...1807-08	William Dennison .....1860-62
Samuel Huntington.....1808-10	David Tod.....1862-64
Return J. Meigs.....1810-14	John Brough.....1864-65
Othniel Looker (acting).....1814	C. Anderson (acting).....1865-66
Thomas Worthington.....1814-18	Jacob D. Cox.....1866-68
Ethan Allen Brown.....1818-22	Rutherford B. Hayes.....1868-72
Allen Trimble (acting).....1822	Edward F. Noyes.....1872-74
Jeremiah Morrow.....1822-25	William Allen.....1874-76
Allen Trimble.....1825-30	Rutherford B. Hayes.....1876-77
Duncan McArthur.....1830-32	Thomas L. Young.....1877-78
Robert Luc.s.....1832-36	Richard M. Bishop.....1878-80
Joseph Vance.....1836-38	Charles Foster.....1880-84
Wilson Shannon.....1838-40	George Hoadley.....1884-86
Thomas Corwin.....1840-42	Joseph B. Foraker.....1886-90
Wilson Shannon.....1842-44	James E. Campbell.....1890-92
T. W. Bartley (acting).....1844	Wm. McKinley.....1892-96
Mordecai Bartley.....1844-46	Asa S. Bushnell.....1896-1900
William Bebb.....1846-49	George K. Nash.....1900-04
Seabury Ford.....1849-50	
Reuben Wood.....1850-53	
William Medill.....1853-56	

Counties, Cities, and Towns.—O. was divided (1890) into 88 counties. The most populous counties and cities 1880 and 1892 are given below:

Counties.	1880.	1890.	Counties.	1880.	1890.
Hamilton.....	313,374	374,573	Summit.....	43,768	54,637
Cuyahoga.....	196,943	309,970	Wa-hington....	42,244	42,880
Franklin.....	86,797	124,087	Mahoning.....	42,871	55,909
Montgomery....	78,550	100,852	Butler.....	42,579	48,597
Lucas.....	67,377	102,296	Clark.....	41,498	52,277
Stark.....	64,031	84,170	Darke.....	40,496	42,951
Muskingum....	49,774	51,210	Tuscarawas....	40,198	46,618
Belmont... ..	49,638	57,413	Wood.....	34,122	44,392
Columbiana....	48,602	59,029	Ashtabula.....	37,133	43,657
Trumbull.....	44,430	42,372	Licking.....	40,450	43,279

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Cities.	1830.	1890.	Cities.	1880.	1890.
Cincinnati.....	255,139	296,908	Irononton.....	8,857	10,939
Cleveland.....	160,146	261,353	Fremont	8,446	7,144
Columbus.....	51,647	88,150	Bellaire.....	8,025	9,934
Toledo	50,137	81,434	Tiffin.....	7,779	10,801
Dayton.....	38,678	61,220	Lima.....	7,567	15,981
Springfield.....	20,730	31,895	Xenia	7,026	7,301
Zanesville.....	18,113	21,009	Delaware.....	6,894	8,224
Akron.....	16,512	27,601	Massillon.....	6,836	10,092
Sandusky.....	15,838	18,471	Urbana.....	6,252	6,516
Youngstown....	15,435	33,220	Circleville.....	6,046	6,556
Canton.....	12,258	26,189	Piqua.....	6,031	9,090
Hamilton.....	12,122	17,565	Wooster.....	5,840	5,901
Steubenville....	12,093	13,394	Norwalk.....	5,704	7,195
Portsmouth.....	11,321	12,394	Galion.....	5,635	6,326
Chillicothe.. . .	10,938	11,288	East Liverpool..	5,568	10,956
Mansfield.....	9,859	13,473	Marietta.....	5,444	8,273
Newark.....	9,600	14,270	Findlay.....	4,633	18,552

Politics.—State and congressional elections are held on Tuesday after the first Monday in Nov. Every male citizen of the United States, 21 years of age, who has resided in the state one year, and in the county, township, or ward such period as may be fixed by law, next preceding election, is entitled to vote; and idiots, insane, and unpardoned felons are excluded from voting. The state govt. (1903) was republican in all state and judicial offices; rebub. majority in senate 9, house 26, joint ballot 35. O. has 23 electoral votes. For presidential vote, see **PRESIDENT AND VICE-PRESIDENT, ELECTIONS OF.**

Population.—The population according to each census since 1800 is given below.

Year.	White.	Colored.	Total.
1800.....	45,028	337	45,365
1810.....	228,861	1,899	230,760
1820.....	576,572	4,723	581,295
1830.....	928,329	9,574	937,903
1840.....	1,502,122	17,345	1,519,467
1850.....	1,955,050	25,279	1,980,329
1860.....	2,302,808	36,673	2,339,511
1870.....	2,601,946	63,213	2,665,260
1880.....	3,117,920	80,142	3,198,062
1890.....	3,584,805	87,511	3,672,316
1900.....	.....	.....	4,157,542

OHIO RIVER: large stream, flowing from the Allegheny Mountains to the Mississippi river. It was discovered by La Salle and his followers in their exploring expedition 1669, and probably received from them the name *La belle rivière*—the beautiful river—by which it was afterward called by the French settlers. They floated down the river in canoes as far as the falls at the present site of Louisville, but returned north without determining whether the stream finally found its way to the Pacific Ocean, as they thought was probable, or was turned from its westward course and continued to the Gulf of Mexico. The river is formed by the Allegheny and Monongahela rivers, which unite at Pittsburg. It pursues a winding w.s.w. course till it reaches Cairo, Ill., where it empties into the Mississippi, a distance of only 615 m. in a straight line, but of 975 m. by its circuitous route. The Allegheny, with a course of between 300 and 400 m., is the upper stream of the O., and should be included in the measurement, making the total length of the stream about 1,300 m. Though not the long-

est of the tributaries to the Mississippi, it discharges the greatest volume of water. The Monongahela rises in W. Va. and flows n. nearly 300 m. The Allegheny rises in Potter co., in the n. part of Penn., in the elevated region which turns part of its waters to the St. Lawrence and part to the Gulf of Mexico, and after passing into N. Y., returns to Penn. and after many deviations reaches the point of junction with the Monongahela. The main Ohio river drains an area variously estimated at 202,400 to 214,000 sq. m., including the states of W. Va., Ky., and Tenn., and portions of nine other states. At Pittsburg the river is 1,021 ft. above sea-level. It has a mean fall of .72 of a ft. per mile, and at Cairo has an elevation of 322 ft. The onward course of the current ranges from one to three m. per hour. The river varies in width from about 1,000 ft. at Pittsburg to 3,000 ft. at its mouth. At high water its breadth is greatly increased. Its depth is extremely variable. At low water it may be forded at many points above Cincinnati. In floods it rises from 30 to 60 ft. above the low water level. At Louisville there are rapids in which the river falls about 27 ft. in $2\frac{1}{2}$ m., but a canal through which large vessels can pass has been constructed. Thus an excellent water-power is supplied and navigation is but slightly impeded. The upper part of the river is generally closed by ice during the winter, and in low water navigation is difficult; but in high water the river and its tributaries offer for large boats a total of 5,000 m. of navigation. At all times steamers can pass as far as Louisville, and during a large part of the summer they are able to reach Wheeling without difficulty. In addition to the two main streams by which it is formed, the Ohio river receives the waters of the Little Kanawha, Great Kanawha, Sandy, Licking, Kentucky, Green, Cumberland, and Tennessee rivers from the s., and the Muskingum, Hocking, Sciota, Great Miami, Little Miami, and Wabash rivers from the n. In the main river there are numerous islands which have been brought under cultivation, and a still larger number of sand-banks appear in its shallow portions. The valley through which it flows presents no grand or imposing features but is noted for quiet beauty, fertile soil, and for the deposits of coal and iron in the ranges of hills through which its upper portion passes. In some places the banks of the tributaries are almost perpendicular, the water having gradually cut its deep and narrow course through the soft limestone of which they are formed, while those of the main river often rise in a series of terraces which spread over quite an area and give a picturesque appearance. The latter formation is seen at Cincinnati, which is built upon two broad terraces, the upper being 52 ft. higher than the other. The constructions of the mound builders are found in large numbers along the shores of the tributaries entering the lower portion of the river. Among the important towns on the banks of the main stream are Pittsburg, Wheeling, Parkersburg, Ironton, Portsmouth, Newport, Cincinnati, Covington, Louisville, Evansville, Paducah, and Cairo.

OHIO COMPANY, THE: see PUTNAM, RUFUS.

OHIO STATE UNIVERSITY: co-educational institu-

OHIO WESLEYAN UNIVERSITY.

tion at Columbus, O.; founded on a congressional land grant 1862; organized 1870; opened 1873. In 1895 it had 85 professors and instructors; 900 students; 15,000 vols. in its various libraries; and total income \$159,693. The grounds occupied had a market value of nearly \$1,500,000; the principal buildings were valued at over \$375,000; and their equipments cost about \$150,000. The endowment aggregated \$545,504, and during the year \$3,000 were received as gifts. Instruction was given in philosophy, science, law, four branches of engineering, civil, mining, mechanical, and electrical, the industrial arts, manual training, military tactics, agriculture, horticulture and forestry, pharmacy, and veterinary medicine. The State Agricultural and Mechanical College formed a department of the univ., and had 57 instructors; 458 students; 170 acres under cultivation, valued at \$68,000; special buildings and equipments valued at \$450,000; and expenditures, \$92,340. The univ. received from the federal govt. for this department, \$32,915 under the act of 1862, and \$20,000 under that of 1890. Pres. of the univ., J. H. Canfield, LL.D.; pres. of the agricultural and mechanical department, William H. Scott.

OHIO UNIVERSITY: co-educational institution at Athens, O.; projected 1787; organized 1804; opened 1809; first commencement 1815; first pres. and faculty chosen 1822. In 1895 it had 20 professors and instructors; 286 students; 21,000 vols. in its libraries; and total income \$30,000. The endowment, based on a purchase of land by the Ohio company from the federal govt., became impaired by lack of legislative appreciation, and 1895 amounted to \$125,000. Since its organization the univ. had graduated 441 students, the first one being the famous Thomas Ewing. Pres., Charles W. Super, LL.D.

OHIO WESLEYAN UNIVERSITY: educational institution at Delaware, Delaware co., O. Upon the grounds are sulphur springs which once had quite a reputation. A hotel and several cottages were built; but 1841 the property was offered for sale, and after consultation with leading men the citizens of Delaware purchased and presented it to the Meth. Episc. denomination on condition that a satisfactory institution of learning be located on the grounds. The condition was accepted by the church authorities, a preparatory school was commenced 1842, and the institution was formally opened as a university 1844, Nov. 14. The faculty consisted of five persons, only three of whom were able to be present at the beginning of the term, and there were only 29 students. There were many difficulties and discouragements in the early years of the institution but by the earnest efforts of its friends they were gradually overcome. The university now has beautiful grounds, adorned with about 800 varieties of trees and shrubs, numerous buildings, an excellent equipment, and takes high rank of the educational institutions of its denomination. J. W. Bashford, D.D., was inaugurated pres. 1889, sep. During the college year 1894-5 the institution had 48 professors and instructors and 1,125 students—646 men, 479 women; of these students, 503 were

OHLAU—OHM'S LAW.

in the preparatory dept., 469 in the collegiate dept., and 45 in the graduate dept. The number of vols. in the library was 13,000, the buildings and grounds were valued at \$450,000, the permanent productive funds amounted to \$550,000, and the benefactions for the year were \$75,000. Ground was broken 1890, September, for a building to cost about \$90,000 to be used for a chapel with a seating capacity of 2,500, recitation-rooms, and offices. The preparatory course of study covers a period of three years, and the collegiate course four years.

OHLAU, or **OLAU**, *ō'low*, or **OLAWA**, *ō-lá'vá*: town of Prussian Silesia, 17 m. s.e. from Breslau, on the Oder. O. is on the railway between Breslau and Vienna; it is an ancient town, with a royal palace and an old castle. At present it has considerable industrial activity. Being the cap. of a circle, it has numerous district courts and offices. Pop (1880) 8,395; (1890) 8,632.

OHM, n. *ōm* [after the celebrated electrician *Ohm*, who first ascertained the laws of electrical resistance]: the unit measure of electrical resistance represented by the Greek *omega*, ω . See **ELECTRICAL UNITS**: **GALVANISM**.

OHM, *ōm*, **GEORG SIMON**: German physicist: 1781, March 16—1854, July 7; b. Erlangen. He was prof. of physics at Nürnberg and at Munich. His fame rests on his study of the galvanic current, with his publication 1825 of his discovery of the law which forms the basis of the mathematical theory of electricity, which theory he pub. 1827 in his only important work, *The Galvanic Chain Mathematically Worked Out*. After him this is named *Ohm's Law* (q.v.).

OHM'S LAW [named from the electrician, *Ohm*, Georg Simon (q.v.)]: law declaring that the intensity of a galvanic current is equal to the electro-motive force divided by the resistance.—The unit of electro-motive force is called a *volt*; the unit of quantity in electrical measurement a *coulomb* or *weber*; the unit of strength of current, an *ampère*; the unit of capacity of electricity, a *farad*.—Also **MEGAVOLT**, n. *mēg'á vōlt* [Gr. *mega*, great]: one million volts. **MEGAFARAD**, n. *mēg'ā fār-ād* [*mega*, and *farad*]: one million farads. **MEGOHM**, n. *mēg'ōm* [*mēga*, and *ohm*]: one milliom ohms. **MICROVOLT**, n. *mīk'ro-vōlt* [Gr. *mikros* small, and *volt*]: one millionth of a volt. **MICROFARAD**, n. *mīk'rō-fār'ād* [*mikros*, and *farad*]: one millionth of a farad. **MICROHM**, n. *mīk'rēm* [*mikros*, and *ohm*]: one millionth of an ohm.

OIDIUM.

OIDIUM, n. ō-ĭd'ĭ-ŭm [Gr. *oi dēin*, to swell up]: important genus of minute fungi of the section *Hyphomycetes*, growing on deceased animal and vegetable substances. They consist of minute tubular threads, forming flocks, white in some species, brightly colored in others, simple or irregularly branched, assuming in their upper part the form of strings of beads, which finally break up into elliptic spores. The species actually existing are probably much more numerous than those ascertained. Among the most important of the vegetable parasites of man is *O. albican*, found on the epithelium in the mouth and throat



Fig. 1.—Thrush Fungus (*Oidium albicans*): general view.

in the disease called *aphthæ*, or thrush, and on that of the throat in diphtheria, also sometimes in the nostrils, stomach, and intestines, on the nails, the nipples, and other places. It is more frequent in children and aged persons, than in those in the prime of life.

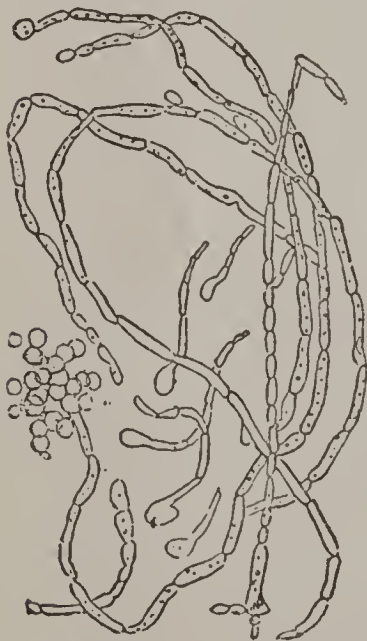


Fig. 2.—Perfectly developed thallus threads, showing constrictions, partition-walls, and ramifications

It occurs frequently in the last stages of many diseases when the mucous membrane is covered with nitrogenous decomposable matter. Indeed, it seems that whatever may be the case as to other vegetable parasites, no species of *O* begins its attack on a perfectly healthy surface, either animal or vegetable; a diseased state of the tissue being to these fungi a necessary condition of vegetation, 'just as the yeast-plant will not vegetate save in a fermentable fluid, that is, in a solution which, in addition to sugar, contains some decomposable albuminous matter.' *O. albicans* appears to the naked eye as a white pasty substance, slightly elevated above the mucous membrane to which it adheres; but under the microscope, its filamentous structure is easily perceived. Its seat is at first on the upper

OIDIUM.

surface of the epithelial cells, but its filaments soon penetrate deeply between them, and the upper epithelial layers are soon worn out, and thrown off by the rapid growth from below.

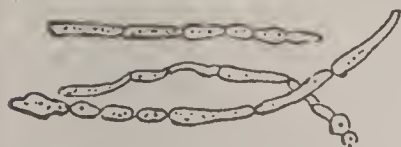


Fig. 3—Ends of perfectly developed thallus threads, more highly magnified (460 diameters).

However incapable the *O. albicans* may be of attacking a healthy surface, there can be no doubt that it greatly contributes to the extension of disease, and that it is very readily communicated from one patient to another when there is catarrh or other inflammatory affection of the mucous membrane.

Another species of *O.* which has attracted great attention is *O. Tuckeri*, regarded by many as producing the grape disease, which, several years ago, injured the vineyards of many parts of the world, but in accordance with the views above expressed, perhaps to be regarded rather as merely accompanying and extending the disease. It may probably be the case that over-cultivation of particular varieties of grape, and too long continued cultivation of the same ground, have so impaired the vigor and healthfulness of the plants, as to make them liable to the attacks of this parasite. *O. Tuckeri* makes its appearance at first in the form of a *mycelium* of webby, creeping, branching filaments (fig. 4, *b*), which send out upright or decumbent jointed stems (fig. 4, *a*). The bead-like joints of the stems become successively filled with spores, which are finally discharged in little clouds for the multiplication of the species. The grape disease was first observed in Kent, England, in the spring of 1845, on vines in the vinery of Mr. Tucker. The ends of the young shoots assumed a crispy appearance, began to wither, and then dried up. The unripe grapes were next attacked, becoming covered with a grayish-white bloom, the skin of the grapes being destroyed, and they rotted and dried up. The disease rapidly spread over other English vineries; was observed about the same time in the vineries of Paris, and soon in the vineyards of almost all parts of France,

Italy, Greece, Tyrol, and Hungary; finally, and in a slighter degree, affecting the vineyards of the Rhine. Its ravages extended to Algeria, Syria, Asia Minor, and many other

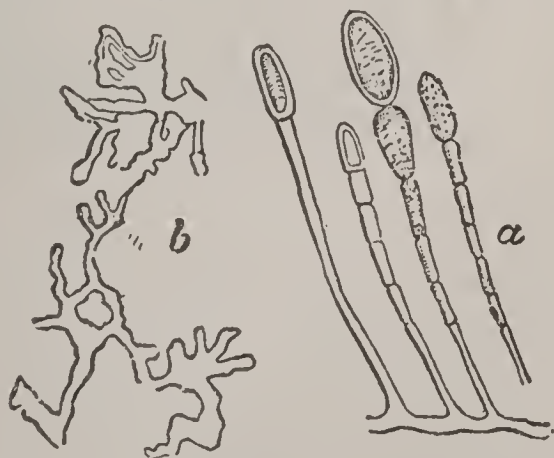


Fig. 4.—Grape Fungus (*Oidium Tuckeri*): early stage.

Italy, Greece, Tyrol, and Hungary: finally, and in a slighter degree, affecting the vineyards of the Rhine. Its ravages extended to Algeria, Syria, Asia Minor, and many other

OIDIUM.

countries, particularly the island of Madeira, where it proved almost completely destructive to the grapes, and nearly put an end to the production of the celebrated Madeira wine. The importation of Madeira wine to Britain, 1851, was 209,127 gallons; 1861, only 28,749 gallons. It is probable that the complete isolation of the Madeira vineyards made the progress of the disease more rapid, and its results more complete than elsewhere, by causing a prevalence of the conditions favorable for it. No kind of vine escaped. The grape disease is perceived first in the leaves, which become whitish, in consequence of a mycelium spreading over the upper surface of the leaf. The leaves sometimes curl up, or they become black at the centre, the blackness extending toward the circumference, and finally they drop off. The plant, through loss of its leaves, now becomes more unhealthy; the shoots are attacked by the disease, the stalks of the bunches of grapes, and the grapes themselves. The parasite penetrates into the young wood, the shoots are covered with spots and blotches of a reddish brown, or even black color, and look as if a red-hot iron had been applied to them. Sometimes they secrete a clammy inodorous fluid all over their surface, and in many cases they wither from the top down half their length. The affected grapes very often first exhibit the disease in a single whitish spot on a single grape of a bunch, which enlarges by radiating irregularly. Fig. 5 represents a fragment of a grape with mycelium and erect fertile filaments. If in a bunch there is one

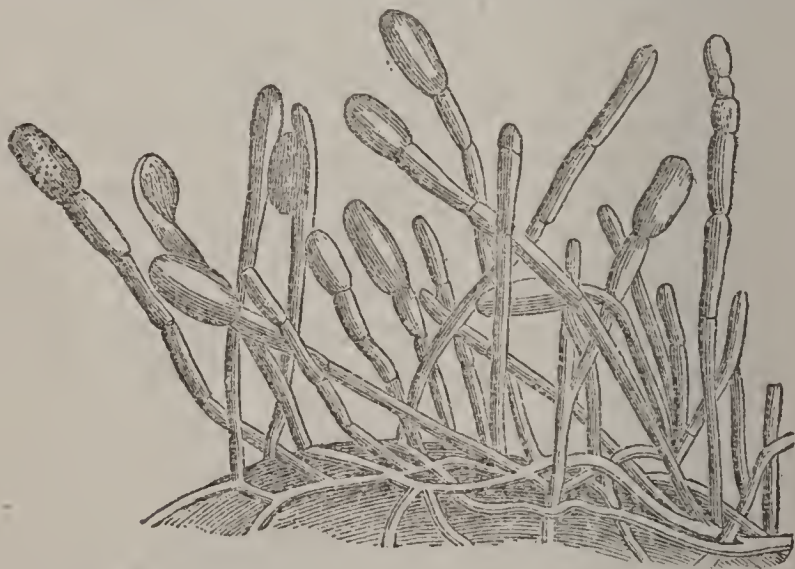


Fig. 5.—Fragment of surface of Grape, with oidium fully developed. abortive grape, it often shows signs of the disease, while the rest remain free. The creeping branches of the mycelium are fixed upon the skin of the grape by rootlets, which do not penetrate into the juicy pulp. The mycelium sends up vertical fertile branches of nearly equal height, densely aggregated, and forming a velvet-like mass. The extremities of these become beaded; and at last the uppermost cell or bead increases in volume, becomes detached, and is carried off by some slight breath of air, to multiply the species by the dispersion of its spores. The other bead-like cells follow in succession.

Various means were resorted to for the prevention and cure of the grape disease. The application of pulverized sulphur was found useful, the fungus withering and drying up when brought into contact with a minute particle of sulphur. The application of sulphur must be frequent, as portions of the mycelium and some of the spores always escape. The use of sulphur was the chief means of checking the spread of O. in French and other European vineyards; it became general in s. France and in Italy; and in consequence of its national importance, the duty on sulphur was reduced by the French govt. Hydro-sulphide of lime also was applied to vines with very beneficial effect. It is prepared by thoroughly mixing 68 ounces of flowers of sulphur with the same quantity of slaked lime, adding three or four quarts of water, boiling for about ten minutes, allowing it to settle, and decanting the clear liquor. When used, one quart is mixed with 100 quarts of water, and it is poured over the vines.

OIL, n. *oyl* [OF. *uile* and *oile*—Sp. *olio*—from L. *ōlĕum*, oil; Ger. *oel*; Dan. *olie*, oil]: highly inflammable fatty liquid expressed or obtained from various animals, from many vegetable substances, and as a natural product from the earth (see OILS): V. to smear or rub over with oil. OIL'ING, imp. OILED, pp. *oyld* OILY, a. *oyl'ĭ*, containing or resembling oil; greasy OILINESS, n. *oyl'ĭ-nēs*, the quality of being oily; greasiness. DRYING OILS, oils which dry and lose their greasy feeling, as *linseed* oil, as distinguished from UNCTUOUS OILS, which do not so dry, as *olive* oil. VOLATILE or ESSENTIAL OILS, oils that pass away in the form of vapor at the temperature of boiling water. MINERAL OIL, an oil extracted from a shale or mineral, as *paraffin*. ROCK-OIL, a natural oil which rises from the earth, as from a spring or well. OIL-CAKE, flat cakes of flax-seed, rape-seed, etc., from which the oil has been expressed (see below). OIL-COLORS, painters' colors or pigments formed of finely ground mineral substances worked up with oil. OILED PAPER, transparent paper used for tracing purposes. OILED SILK, prepared silk impervious to moisture, employed in making balloons, etc. OILING OUT, among *artists*, a thin coating of drying oil passed over the parts of a picture to be retouched, which is immediately wiped off, leaving thus only a slight coating on the surface. OIL-CLOTH, painted floor-cloth (see FLOOR-CLOTH). OIL-GAS, a gas obtained from oil. OILMAN, one who sells oils. OIL-MILL, a mill for crushing seeds in order to obtain their oil. OIL-NUT, the butternut of N. Amer.; a shrub; the *Palma Christi*. OIL PAINTING, a picture painted with colors which have been mixed with oil; the art of painting in oil-colors. OILSKIN, a sort of waterproof cloth. OIL STONE, a sort of hone-stone of a white or black color, imported from Turkey. OIL-TREE, the *Palma Christi*, or castor-oil plant. OIL OF VITRIOL, the popular name for sulphuric acid. OILY GRAINS, the seeds of the *sesamum*, an eastern grain plant which contains abundance of oil. OIL-COALS, the coals or shales which yield large quantities of oil on distillation. OIL-SPRINGS, or OIL-WELLS, springs in which oil rises out of the earth as a natural production, like springs of water.

OIL-CAKE.

OIL-CAKE: cake which remains in the press, when seeds are crushed to express the oil which they contain. Oil-cake still retains a portion of the oil of the seed with almost all its other constituents, and is valuable either for feeding cattle or for manure. In some countries *Linseed-cake* is so much more largely used than any other kind, that the name oil-cake is in general appropriated to it, the other kinds being known as *Rape-cake*, *Poppy-cake*, *Hemp-cake*, *Colza-cake*, etc., according to the plant from whose seed they are produced. The use of oil-cake for feeding cattle has very much increased of late years, and it is an article of commercial importance. Large quantities are exported from different parts of Europe and from N. America. But *English Linseed-cake*—cake made at oil-mills in England, mostly from imported seed—is preferred to any other, because heat not being so freely applied during the expression of the oil, more oil is left in the cake, and also because foreign cake often receives injury from dampness both before and during the sea passage. Besides the oil which remains in it, linseed-cake contains 24 to 33 per cent. of nitrogenous substances or protein compounds, which make it very valuable both for feeding cattle and for manure. The value of linseed-cake for feeding is greater than that of any kind of grain or pulse.—*Rape-cake* is much cheaper than linseed-cake, but is not relished by cattle, having a hot taste, and a tendency to become rancid. Sheep, however, eat it readily, and it is often used for fattening them. It is also ground to a coarse powder (*rape-dust*), and used as manure. Its fertilizing power is great, and it is used by the Flemish farmers as guano has been used by those of the United States.—*Cotton Seed-cake* is much used as a manure in parts of N. America.—*Cocoa-nut-cake* is used in s India, both for feeding cattle and for manure.—For some other kinds of oil-cake, see the plants from which they are derived. Their properties are generally similar to those of linseed-cake, though the pungency of some, as *Mustard-cake*, renders them unsuitable for feeding cattle. See OILS.

OIL CITY—OILLET

OIL CITY: city, Venango co., Penn., at the junction of Oil creek with the Allegheny river, on the Allegheny Valley, the Western New York and Pennsylvania, the Erie, and the Lake Shore and Michigan Southern railroads; eight m. from Franklin, the cap. of the co., 132 m. from Pittsburg. The business portion of the city is close to the river, and nearly all the residences are built on the higher land. The buildings are largely of brick, the streets are paved and lighted with gas, and there is a good system of water-works. There are 12 churches, two daily and two weekly newspapers, 3 national, one state, and three private banks, an oil exchange, a branch of the Young Men's Christian Assoc., an opera-house, and four large and several smaller hotels. The city is the great centre of the petroleum production of the country. Manufactures are not extensive; but there are wagon shops, foundries, barrel shops, and oil-refining works. The river flows through the city, and is crossed by fine bridges. From Clark's Summit, to which access is gained by an inclined railroad, a beautiful view is obtained. The first oil-well in the place was sunk 1859. There were then only 12 families residing within the present limits of the city, but its growth for a few years was quite rapid. The place was incorporated as a borough 1862. and received a city charter 1871. Pop. (1880) 7,315; (1890) 10,932; (1900) 13,264.

OIL FUEL: see **PETROLEUM**.

OILLET, or **OILLETTE**, or **OYLET**, n. *oy'let* [F. *œillet*, dim of *œil*, an eye]: in *arch.*, openings or loopholes made in the battlements and walls of mediæval fortifications, through which arrows were discharged at the besiegers.

OIL ON THE WAVES.

OIL ON THE WAVES: means of safety for vessels in storms, the efficacy of which, though known to the ancients, has only of late received practical recognition among modern seamen. The action of the oil consists in preventing the combs of the waves from breaking and sweeping over the vessel's deck. Detailed directions for the employment of oil in various circumstances of danger at sea are now given in works on practical seamanship, and vessels go to sea provided with the necessary oil and appliances for diffusing it on the water. If a bar is to be crossed in heavy weather, after battening down all hatches, etc., 2 pieces of India-rubber pipe, abt. 20 ft. long and 1-in. diameter, are to be put through the hawse-pipes, one on each side, and their ends allowed to trail in the sea. On the upper end of each piece of tube, a good-sized funnel is to be lashed, and secured to the stanchion in a vertical position, and a man stationed at each with a 3-gal. can of colza-oil. When the vessel enters the outermost sea that breaks on the bar, each man gently pours the oil down the pipe. This will smooth the bar, and the vessel will steer much better. Almost any oil of animal or vegetable origin will do; but petroleum is not of much service, except to mix with and thin other oil, if requisite. When lying to in a gale, head to wind and drifting slowly, if a little oil is used, a ship ought to pull through the heaviest storm. Running in a gale, an oil-bag hung over the weather-side, or oil poured down a pipe well forward, is of great service in preventing the sea from breaking aboard; if the gale, increasing, makes it desirable to round to, the method is, to prepare a sea-anchor, watch for a smooth spell, and then put the helm down, heave overboard a few gallons of oil, and float the sea-anchor. Keep pouring the oil on the sea, down a weather-pipe or scupper, while the ship is coming up to the wind. A well-equipped sailing-ship, even if deeply laden, will lie to under a closely reefed topsail or tarpaulin in the rigging, and weather almost any gale, so long as she is not taken aback. Sailing-vessels under these circumstances now often use an oil-bag paid out to windward, to smooth the sea still more: this is the ideal position of a laden vessel at sea in a dangerous storm. While towing a disabled ship over a bar, or where the sea is very wild, a couple of oil-bags over the stern will ease the sea on the tow. With a good steamer, to take a shipwrecked crew off a wreck, the best way is to run to windward of the wreck, lower the lee boat, put the steamer head to sea and dead to windward, and let the boat drop down toward the wreck: by constantly pouring out oil, the sea will be, in great degree, stilled between the steamer and the wreck.

OIL PALM.

OIL PALM (*Elæis*): genus of palms, of the same tribe with the cocoa-nut palm. The best known species, the



Oil Palm.

(Copied from Livingstone's *Travels in Central Africa*.)

O. P. of tropical Africa, sometimes attains a height of 60-80 ft. The stems are thickest in the middle, tapering chiefly upward. The leaves are pinnate, their footstalks spiny. The flowers have a strong peculiar smell, like that of anise or chervil. The fruit forms an immense head, like a great pineapple, consisting of a great number of bright orange-colored drupes, having a thin skin, an oily pulp, and a hard stone. The pulp of the drupes, forming about three-fourths of their whole bulk, yields, by bruising and boiling, an oil, which when fresh has a pleasant odor of violets, and when removed into colder regions acquires the consistency of butter. This oil is now very largely exported from tropical Africa to western lands, and is much used for many purposes, e.g., for making candles, toilet soaps, etc., and for lubricating machinery and wheels of railway carriages. When fresh, it is eaten like butter: see OILS. The nut was formerly rejected as useless after the oil had been obtained from the fruit; but from its kernel a fixed oil is now extracted called PALM NUT OIL; which is clear and limpid, and has become to some extent an article of commerce. The O. P. abounds in mangrove swamps, but is a conspicuous feature of the landscape also on sandy coasts in tropical parts of w. Africa. It yields from its trunk abundance of a pleasant and harmless beverage, which, however, becomes intoxicating in a few hours; called *Malova* in Angola, and much used there as an alcoholic stimulant. The unripe nuts of the O. P. are used in parts of Africa for making an excellent kind of soup. The O. P. has been introduced into warmer parts of America, and has become abundant in them.

OIL-REFINING.

OIL-REFINING: purifying of oils. Several oils, from the mode of their extraction, are necessarily impure, and various means are taken for refining or purifying them: thus, the so-called *fish-oils*—that is, whale, seal, cod, etc.—are clarified either by mixing them with a chemical solution, or by passing steam through them and filtering through coarse charcoal. The chemical solutions employed are various. One method is, to use a strong solution of oak bark, the tannic acid in which combines with the albuminous matters present in the oil, and precipitates them; another plan is, to agitate bleaching-powder, formed into a milk with water, with the oil; and then, after subsidence of the chloride of lime and water, to wash the oil with water, or jets of steam passed through it. A more simple and very effective plan is to apply a steam heat not exceeding 200° F., and then pass a current of air of the same temperature through it continuously for some time: this effectually bleaches the oil.

Olive, and some other vegetable oils, are refined by agitating them with a saturated solution of caustic soda. This renders the whole soapy; but after a time the oil precipitates a saponaceous deposit, and the remainder becomes quite clear and pure, and is then poured off. The value of several of the most important oils of commerce is so greatly increased by refining that this art has now become a very important and extensive business.

OILS.

OILS (including the Fats): an important and well-marked group of organic compounds abundant both in the animal and in the vegetable kingdoms. They are not simple organic compounds, but each of them is a mixture of several such compounds to which the term *glycerides* is applied; and the glycerides which by their mixture in various proportions form the numerous fats and oils are mainly those of palmitic, stearic, and oleic acids—if we adopt the recent view that Margarinic Acid (q.v.) has no independent existence—and to a less extent those of other fatty acids, noticed below, such as butyric, caproic, caprylic, and capric acids, obtained from butter; myristic acid, obtained from cocoa-nut oil, etc. The members of this group may be solid and hard, like suet; semi-solid and soft, like butter and lard; or fluid like the oils. The solid and semi-solid are, however, generally placed together and termed fats, in distinction from the fluid oils. The most solid fats are readily fusible, and become reduced to a fluid or oily state at a temperature lower than that of the boiling point of water. They are not volatile, in other words they cannot be distilled without decomposition, and it is not until a temperature between 500° and 600° is reached that they begin nearly simultaneously to boil and to undergo decomposition, giving off acrolene (an acrid product of the distillation of glycerine) and other compounds. In consequence of this property these oils are termed *fixed oils*, in contradistinction to a perfectly separate group of oily matters, on which the odoriferous properties of plants depend, and which, from their being able to bear distillation without change, are known as *volatile oils*. These, known also as *essential* or *ethereal oils*, differ *in toto* in chemical composition from the compounds which we are now considering, and will be separately noticed in the latter part of this article. All the fats and oils are lighter than water, and are perfectly insoluble in that fluid. Their specific gravity ranges from about 0.91 to 0.94. They dissolve in ether, oil of turpentine (one of the volatile oils), benzol, and to a certain extent in alcohol; while on the other hand they act as solvents for sulphur, phosphorus, etc. If a fatty matter be shaken with a watery solution of albumen, gum, or some other substance that increases the density of the water and renders it viscid, the mixture assumes a milky appearance, in consequence of the suspension of the fat or oil in the form of microscopic globules, and is termed an *emulsion*. These bodies possess the property of penetrating paper and other fabrics, rendering them transparent and producing what is well known as a greasy stain. They are not readily inflammable unless with the agency of a wick, when they burn with a bright flame. In a pure and fresh state they are devoid of taste and smell, but on exposure to the air they become oxidized and acid, assume a deeper color, evolve a disagreeable odor, and are acrid to the taste; or, in popular language, they become *rancid*. The rapidity with which this change occurs is considerably increased by the presence of mucilaginous or albuminous bodies.

OILS.

The rancidity may be removed by shaking the oil in hot water in which a little hydrated magnesia is suspended.

For the general diffusion of fats and oils in the animal kingdom, see FATS, ANIMAL. In the vegetable kingdom they are equally widely distributed, there being scarcely any tissue of any plant in which traces of them may not be detected; but they are abundant specially in the seeds. The seeds of the *cruciferae* are remarkably rich in oil; linseed yielding fully 20 per cent., and rape-seed about 40 per cent. of oil; and some fruits, as those of the olive and oil-palm, yield an abundance of oil.

The uses of the oils and fats are numerous and highly important, various members of this group being extensively employed as food, as medicines, as lubricating agents, in the preparation of soaps, plasters, ointments, varnishes, pigments, candles and other means of illumination, for the purpose of dressing leather, etc. The following are the most important members of the group.

1. *Vegetable Fats*.—The chief solid fats of vegetable origin are cocoa-nut oil, nutmeg butter, and palm oil. The fluid vegetable fats or oils are divisible into *non-drying* and *drying oils*; the latter being distinguished from the former by their becoming dry and solid when exposed in thin layers to the air in consequence of oxygenation, while the former do not absorb oxygen, but are converted by hyponitric acid or suboxide of mercury into elaidine (see OLEINE), a reaction not exhibited by the drying oils. Some of the drying oils, especially linseed oil, when mixed with cotton, wool, or tow, absorb oxygen so rapidly and consequently become so heated as to take fire, and many cases of the spontaneous combustion of heaps of oily materials that have been employed in cleaning machinery have been recorded. The drying property may be much increased by treating the oils hot with a little litharge or with borate or oxide of manganese; linseed oil thus treated is known as *boiled oil*. The chief non-drying oils are olive oil, almond oil, and colza oil; while the most important drying oils are those of linseed, hemp, poppy, and walnut; castor oil seems to form a link between these two classes of oils, since it gradually becomes hard by long exposure to the air.

2. *Animal Fats*.—The chief solid fats are suet, lard butter, goose grease, etc., while among the fluid fats or oils, sperm oil, ordinary whale oil, cod liver oil, and neat's-foot oil may be especially mentioned. In many of their characters, spermaceti and bees wax resemble the solid fats, but (see those titles) they are not glycerides. As a general rule, stearin and palmitin, both of which have comparatively high fusing points (between 157° and 114°), preponderate in the solid fats; while oleine, fluid at 32° , is the characteristic constituent of the oils.

One or two of the most important of the decompositions of the fats must be noticed. When any of these bodies are heated with hydrated alkalies they undergo a change which has long been known as Saponification or conversion into Soap (q.v.), in which the fatty acid combines with

the alkali to form a *soap*, while the sweet viscid liquid glycerine is simultaneously formed. The combination of a fatty acid with oxide of lead, also a true saponification, produces free glycerine and a *lead soap* used in pharmacy, and termed *lead plaster*. For further details on these points see SOAP: PLASTERS.

The process of saponification affords a ready means of isolating the fatty acids, as the stearic or oleic acid may be at once separated from an alkaline stearate or oleate by the addition of hydrochloric or tartaric acid. When the fatty acids are, however, required on a large scale, as for manufacture of the so called stearine candles, which in reality consist mainly of stearic and palmitic acids, sulphuric acid and the oil or fat are made to act on each other at high temperature: see CANDLE. The fatty acids may be procured in a very pure form also by the injection of superheated steam at a temperature between 500° and 600° into heated fat—a process which, according to Prof. Miller, ‘from its simplicity and from the purity of the products which it yields, bids fair to supersede those previously employed in the preparation of the fatty acids for illuminating purposes.’

The only fatty acids which have been specially mentioned in this article are those which occur in natural glycerides, such as stearic, palmitic, and oleic acids. The term *fatty acid* has, however, in Chemistry a wide signification, and is applied to many acids homologous to stearic acid, but not occurring in any natural fats or oils. Thus stearic acid may be taken as the type of a group of acids (of which 17 are already known) represented by the general formula $C_nH_{2n}O_2$, commencing with formic acid (CH_2O_2), including acetic, propionic, butyric, valeric (or valerianic), caproic, cœnanthylic, caprylic, pelargonic, capric, lauric, myristic, palmitic, stearic, arachidic, and cerotic acids, and terminating with melissic acid ($C_{30}H_{60}O_2$). These are divided into the volatile and the true (or solid) fatty acids; the volatile acids being those from formic to capric acid, while the remainder, beginning with lauric acid, are the true fatty acids. The *volatile fatty acids* are fluid and for the most part oily at ordinary temperatures, may be distilled without change possess a pungent odor, and are acrid to the taste, and their solutions redden litmus paper strongly. The *true fatty acids*, on the other hand, are solid at ordinary temperatures, are devoid of taste and smell, cannot be distilled, except *in vacuo*, without decomposition, and exert only a slight action on litmus. The volatile acids occur in the animal and vegetable kingdoms (formic acid, e.g., in red ants, and valeric acid, in the root of valerian), and they are produced likewise by the oxidation and spontaneous decomposition of numerous animal and vegetable products. The entire series up to capric acid may be obtained by oxidizing oleic acid with nitric acid. The true or solid acids occur only as constituents of animal and vegetable fats.

Some chemists make a second group of fatty acids, of which oleic acid is the type, and which have the general

OILS.

formula $C_{2n}H_{2n-2}O_4$; but Oleic Acid (q.v.) is the only member of this group of any practical importance.

A complete list of even the chief fats and fixed oils would take up far more space than we can command. For many of the principal oils, and some account of their properties and uses, see the separate titles, e.g., ALMOND OIL, CASTOR OIL, CROTON OIL; or see the titles of the substances from which they are procured, e.g., LINSEED, RAPE, CANDLE-NUT.

The *Volatile* or *Essential Oils* exist, in most instances, ready formed in plants, and are believed to constitute their odorous principles. They form an extremely numerous class, of which most of the members are fluid; a few (oil of aniseed for example) being solid at ordinary temperatures, but all are capable of being distilled without undergoing change. They resemble the fixed oils in their inflammability, in their solubility in the same fluids and in their communicating a greasy stain to paper or any other fabric; but the stain in this case soon disappears, and they further differ in communicating a rough and harsh rather than an unctuous feeling to the skin. Their boiling points are in almost all cases far higher than that of water, but when heated with water they pass off with the steam -- a property on which one of the chief modes of obtaining them depends: see PERFUMERY. The oils have characteristic penetrating odors, which are seldom so pleasant as those of the plants from which they are obtained, and their taste is hot and irritating. They vary in specific gravity, but most of them are lighter than water and refract light strongly. Most of them are nearly colorless when fresh, but darken on exposure to light and air; but a few are green, and two or three of blue color. By prolonged exposure they absorb oxygen and become converted into resins.

By far the greater number of them are products of the vital activity of plants, in which most of them exist ready formed, being inclosed in minute cavities often visible to the naked eye. Although diffused through almost every part of a plant, the oil is especially abundant in particular organs of certain families of plants. In the *Umbelliferae*, it is most abundant in the seeds; in the *Rosaceae*, in the petals of the flowers; in the *Myrtaceae* and *Labiatae*, in the leaves; in the *Aurantiaeeae*, in the rind of the fruit. As in the case of the animal and vegetable fats and fixed oils, so most of the essential oils occurring in plants are mixtures of two or more distinct chemical compounds, one of which usually contains no oxygen, while the others are oxidized. Of these, the former, which is a pure hydrocarbon, is the more volatile, and acts as a solvent for the others. Most of these oils, when cooled, separate into a solid and a fluid portion, to which the terms *Stearopten* and *Elæopten* have been applied.

In the comparatively few cases in which the oils are not formed naturally they are produced by a species of fermentation, as in the case of Oil of Bitter Almonds and Oil of Mustard (q.v.), while others are the product of dry distillation or of the putrefaction of many vegetable bodies.

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Some of the natural oils, as those of cinnamon, spiræa, and wintergreen, also have been artificially produced.

The essential oils are much employed in the fabrication of Perfumery (q.v.), for flavoring liquors, confectionery, etc., for various purposes in the arts (as in silvering mirrors), and in medicine. The special uses of the most important of these oils in medicine will be noticed subsequently.

The members of this group, which is an extremely numerous one (between 100 and 200 essential oils being noticed in works devoted to the specific treatment of this subject), admit of arrangement under four heads. 1. Pure Hydrocarbons; 2. Oxygenous Essential Oils; 3. Sulphurous Essential Oils; 4. Essential Oils obtained by Fermentation, Dry Distillation, etc.

1. The *Pure Hydrocarbons* are mostly fluid, and have lower specific gravity, a lower boiling point, and higher refractive power than the oxygenous oils. They absorb oxygen, and are converted into oxygenous oils and resins. They may be separated from oxygenous oils, with which they are usually associated, by fractional distillation. They include oil of turpentine ($C_{10}H_{16}$), and the oils of bergamot, birch, camomile, caraway, cloves, elemi, hop, juniper, lemons, orange, parsley, savine, and valerian, most or all of which contain the same hydrocarbon as Oil of Turpentine (q.v.), and in addition to it an oxidized compound; oil of copaiva ($C_{15}H_{24}$), attar of roses (C_8H_{16}), etc.

2. The *Oxygenous Essential Oils* may be either fluid or solid, the latter being termed also *Camphors*. A stearopten separates from most of the fluid oils on cooling. They are more soluble in water and spirit of wine than the pure hydrocarbons. They may be divided into (1.) those which are fluid at ordinary temperatures, such as those of aniseed, camomile,* cajeput, caraway,* cinnamon, cloves,* fennel, lavender, peppermint, rue, spiræa, thyme,* wintergreen, etc. Those marked with a (*) are associated with the pure hydrocarbons above described. (2.) The camphors, such as ordinary camphor ($C_{10}H_{16}O$), Borneo camphor ($C_{10}H_{18}O$), etc.

3. The *Sulphurous Essential Oils* are chiefly obtained from the *Cruciferae*. They all probably contain the radical *allyl* (C_3H_5). The oils of garlic and of mustard (see these titles), and those of horse-radish, scurvy-grass, and asafetida, are the best illustrative of this division.

4. Among the essential oils obtained by fermentation, dry distillation, etc., are the oils of bitter almonds and of black mustard, the oils of milfoil, plantain, centaury, etc. (whose leaves have no smell until they have been moistened for some time with water, when a kind of fermentation is set up and oil is yielded in abundance), Furfuramide (q.v.), etc.

The pharmacopœia contains the essential oils of anise, cajeput, caraway, camomile, cinnamon, cloves, copaiva, coriander, cubeb, dill, juniper, lavender, lemon, nutmeg, peppermint, pimento, rosemary, rue, savine, spearmint, and turpentine. Of these, the oils of anise, cajeput, caraway,

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camomile, coriander, dill, peppermint, pimento, and spearmint are used as stimulants and antispasmodics in cases of flatulence, griping, etc., and to disguise the nauseous taste of various medicines. The oils of cajeput, cinnamon, and rue act similarly but more powerfully. The oils of copaiva and cubeb act in the same manner as the substances from which they are derived; oil of juniper is a powerful diuretic, and oil of savine (and to a less extent oil of rue) an emmenagogue. The oils of lavender and lemon are used to conceal the smell of sulphur ointment and to give an agreeable odor to lotions, etc. The oil of rosemary is employed chiefly as a stimulating liniment, especially in cases of baldness, and the oil of nutmeg is seldom given medicinally except in the form of aromatic spirit of ammonia, into the composition of which it enters.

Essential oils for flavoring are not always derived from the substances of which they are intended to communicate the flavor. Thus an essential oil indistinguishable (or nearly so) from that of pine-apples may, by recent methods, be obtained from butyric acid, a product of rancid butter or putrid cheese; and a very serviceable 'essence of pears' is procured from the offensive fusil oil.

Bland oils—such, for example, as olive oil—were much used by the ancients as external applications in various forms of disease. Celsus repeatedly speaks of the use of oil applied externally with friction in fevers, and in various other diseases. Pliny says that olive oil warms the body and at the same time cools the head, and that it was used with these objects previously to taking cold baths. Aretæus recommends a sitz-bath of oil in cases of renal calculi, and Josephus relates that a similar mode of treatment was employed in the case of Herod. Galen prescribed 'oil and wine' for wounds in the head; and the parable of the good Samaritan affords additional evidence that this was a common mode of treating wounds. The use of oil preparatory to athletic exercises is referred to by numerous Greek and Latin writers.

As a cosmetic—that is to say, as a means of giving to the skin and hair a smooth and graceful appearance—its use has been prevalent in hot climates from the earliest times. There is abundant historical evidence of this use of oil among the Egyptians, the Jews, the Greeks, and the Romans; and Pliny's statement that butter is used by the negroes and the lower class of Arabs for the purpose of anointing is confirmed by the observation of all recent African travellers. In hot climates there is doubtless a practical as well as an æsthetic object in anointing. The oil, being a bad conductor of heat, affords a certain amount of protection against the direct action of the solar heat; it is likewise serviceable as a protection against the attacks of insects and as checking excessive perspiration. The fact that oily and fatty matters are bad conductors of heat serves also to explain why the Esquimaux and other dwellers in Arctic regions have recourse to the inunction of the blubber, etc. In their case the oily investment serves to prevent the escape of the bodily heat,

The Greeks and Romans not only employed oil for the purposes above mentioned, but in their funereal rites, the bodies of their dead being anointed with oil, with the view probably of postponing incipient decomposition. A similar practice existed among the Jews, and in the Gospels are various passages in which the Lord Jesus referred to his own body being anointed by anticipation. It appears from the evidence of St. Chrysostom and other writers that this ancient usage of anointing the bodies of the dead was long retained in the Christian Church: see UNCTION: EXTREME UNCTION.

It is noticeable that the ancient system of anointing, as a medical treatment, has to some extent been revived in modern times. Many physicians of the present day combine the inunction of cod-liver oil with its internal administration, a combination recommended first by Prof. Simpson of Edinburgh; and Sir Henry Holland advocates the practice of anointing the harsh, dry skin of dyspeptic patients with warm oils. There can be little doubt that in many forms of disease the local application of medicinal oils is advantageous.

For the *mineral oils*, see NAPHTHA: PARAFFIN: PARAFFIN OIL: PETROLEUM: SHALE.

OILS IN THEIR COMMERCIAL RELATIONS.—The solid animal oils found in commerce are butter and lard, tallow, mares' grease, goose grease, neats-foot oil, and unrefined yolk of egg oils. For two first, see BUTTER: LARD. Tallow is the fat of oxen and sheep, especially the fat which envelops the kidneys and other parts of the viscera, rendered down or melted. The qualities of this solid oil render it particularly well adapted for making candles, and until the end of the first quarter of the 19th c. candles for ordinary use were almost wholly made of it, the high price of wax and spermaceti preventing their employment except by the most wealthy and for ecclesiastical purposes. Besides its use in making candles tallow is most extensively used in the manufacture of soap, and for the purpose of preserving machinery from rust. The trade in tallow with Russia and with N. and S. America, and even with India and other countries, is considerable; but it is declining because of the extension of gas and the enormous development of the Paraffin and Petroleum (q.v.) oils, and other light-giving materials. One of the chief uses of tallow is now in the manufacture of Soap (q.v.); and even in this it has yielded in importance to palm and cocoa-nut oils.

Mares' grease is not nearly so solid as tallow; it is a yellowish-brown grease, imported extensively from Montevideo and Buenos Ayres, where vast numbers of horses are slaughtered for their hides, bones, and grease; it is particularly valuable as a lubricant for machinery, and is employed chiefly for that purpose after much of its stearin has been removed for candle-making. It is said that the name *mares' grease* arises from the fact that in S. America horses are chiefly used alive, while mares are slaughtered as comparatively useless. Goose grease is another soft fat, much valued by housewives for many

purposes, but excepting that it is sold in some districts as a remedial agent, it has no commercial importance. Neats-foot oil is a soft fat procured in the preparation of the feet and intestines of oxen for food as sold in the meat-shops. The quantity obtained is not very great, but it is in much request by carriers for dressing leather. Yolk of egg oil is a hard oil, which, though little known in some countries, is extensively used where eggs are cheap; e.g., in Russia it is manufactured on so large a scale as to supply some of the largest makers of fancy soaps, and it forms the principal material in the celebrated Kazan soap; and certain pomades are made of it which have great reputation and realize very high prices. This oil is not unlike palm oil in color and consistency, but when refined is liquid and has a reddish-yellow color. Its price at Moscow is as high as \$2 per lb.

The liquid animal oils are more numerous, and, excepting tallow, are far more important, the so-called fish-oils being the principal. These are whale, porpoise, seal, cod, herring, shark, menhaden, etc. The whales which are pursued for their oil are: (1.) The sperm whale. This huge creature is from 60 to 70 ft. in length, and yields generally from 5,000 to 6,000 gallons of oil. The finest oil is taken from the great reservoir on the head. The oil of this species is all of a quality superior to others, and is known as sperm oil. For the method of procuring this oil, see CACHALOT. (2.) The right whale, which yields by far the largest proportion of whale oil. This, with that yielded by other less important species, is usually called train oil. The term *train* is supposed to be a corruption of *drain*, and applies to the circumstance of the oil being drained out of the blubber; and in this sense it is also applied to sperm oil from the blubber of the cachalot, in distinction from the finer oil from the head matter. The right whale forms the chief object of the northern fisheries, but other species of *Balæna* are pursued in different parts of the world for their oil: see WHALE.

Among the smailer Cetaceans, the porpoises—called also dolphins ('puffydunters' on the e. coast of Scotland)—and grampuses yield an excellent oil, second only in value to that of regular oil whales.

A large quantity of very valuable oil is obtained from seals, and the seal-fishery as a means of obtaining oil is only second in importance to that of the whale. It is carried on chiefly on the shores of Newfoundland, Greenland, and Labrador. Like the whales, the seals have a thick layer of blubber, in which the oil is contained: see SEAL. The first draining from the blubber is of fine clear pale-straw color; the next, yellow or tinged; and the last is brown or dark. The whale and the seal oils are nearly all used for burning in lamps, and for this purpose they are admirably adapted by their great illuminating power. They are also the best lubricants for machinery.

Of the true fish-oils, that from the cod is of much importance, especially since its medicinal properties were discovered. It is made only from the liver of the fish; and

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the attempt to induce a popular belief that the so-called cod-liver oil was different from the ordinary cod oil of commerce was simply a cheat; no difference exists, and the oil is obtained just as good from the oil merchant at a moderate price per gallon as from the empiric at an exorbitant price per pint. Indeed, the purer the oil can be got the better it is in a remedial point of view, notwithstanding the efforts made to convince the public that a certain color is better than any other.

Instead of the old and somewhat rude methods of preparing the oil (see COD-LIVER OIL), much more complete and efficient arrangements are now adopted. The livers, when taken from the fish, are all examined, washed in clean water, and placed in sieves to dry. Thence they are transferred to pans heated with steam, and after being exposed to a gentle heat about three-quarters of an hour the heat is discontinued; and when cold, the oil which has separated is skimmed off and strained through flannel bags into tubs. Here certain impurities subside, and the clear oil is poured off from the dregs, and the contents of numerous tubs are transferred to galvanized iron cisterns, in which a further settlement takes place. The oil is now ready for the filters, which are made of the strong cloth called moleskin, through which it is forced by atmospheric pressure into the store-tanks, which also are of galvanized iron. Hence it is pumped into the casks for export, which are usually hogsheads, tierces, and barrels. Besides its consumption in lamps, and for medicinal purposes, cod oil is used in making some kinds of soap. Oil is occasionally made from the herring, but not in very great quantities; it, however, forms a commercial article. It is made from the whole of the fish, the smell of which it retains to a very disagreeable extent.

The lightest of all the fixed oils is made from the liver of the common shark; it ranges from specific gravity 0.865 to 0.867. This, and the oil made from the livers of the common skate (*Raja batis*), the thornback (*R. clavata*), and the white skate (*Rhinobatus cerniculus*), are often substituted for the cod-liver oil used medicinally, but have not its valuable properties.

The oil expressed after steaming from the menhaden or bony fish of the Atlantic coast of the United States has acquired much importance in commerce. It is said to be used as an adulterant of linseed oil. Rope-makers and others use it.

Under the name of lard oil large quantities of the oleine of lard have been made of late years in America, and exported. It is a secondary product, arising from the great manufacture of lard stearin for candle-making which has arisen in this country, and is used principally as a lubricant for machinery.

The solid vegetable fixed oils which find a place in commerce are palm oil, cocoa-nut oil, kokum or vegetable tallow, and carapa or carap oil. The palm oil is of bright orange-yellow color and an agreeable violet odor; it is obtained from the not very thick covering of the hard

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seeds of the Oil-palm (q.v.). The fruits, when gathered, are shaken out of the clusters, and are laid in heaps in the sun for a short time, after which the natives boil them slowly in water, when the oil separates and is skimmed off the surface, and carried in small quantities to the depots of the traders, who transfer it to casks prepared to receive it on board the ships. The quantity thus collected is enormous. The imports into Britain alone for the five years 1876-80 were as follows, in cwts.: (1876) 879,824; (1877) 897,264; (1878) 670,797; (1879) 881,329; (1880) 1,032,823. Previous to 1840 the chief use of palm oil was in making soap, but it was about that time found that the palmitin or fat acid of this oil was admirably adapted for manufacture of Candles (q.v.); and since then it has become of much greater importance.

Cocoa-nut oil is a white fat, with the peculiar smell of the kernel; it is made by grinding or pounding the kernel of the cocoa-nut, termed in its dry state *kola*. After it has been boiled in water for a short time, the paste is submitted to great pressure, and a large quantity of milky juice is obtained; this is slowly boiled, and the oil separates and rises to the surface in considerable quantity, and is skimmed off. Twenty ordinary-sized nuts will yield as much as two quarts of oil. This oil is now very largely imported into western countries, and, treated in the same way as palm oil, forms a stearin, which greatly improves that of palm oil when mixed with it in proper proportions; neither does so well separately, and the consumption of cocoa-nut oil has consequently greatly increased. Most of it comes from Ceylon, where the tree is largely cultivated on purpose. The imports to Great Britain (1880) were 318,454 cwts. By far the greater proportion of this vast quantity is used by the candle manufacturers, and the remainder in making common soap, its disagreeable smell preventing it being employed for the better kinds.

Vegetable tallow, or kokum oil, also is used in small quantities by the candle-makers. It comes from Singapore, and is produced from the seed of *Garcinia purpurea*, a species of the same genus with the mangosteen. Another kind of vegetable tallow is made in China, from the seeds of *Stillingia sebifera*.

Carapa, carap, crab, or andiroba oil, is very extensively made in British Guiana and the W. Indies, but it is nearly all used there, either as a pomade for preserving the hair, or as an unguent for rheumatism and neuralgic pains, for which purposes it is said to be very useful: see CARAPA.

The bassia oil is beginning to attract attention in England, and several importations have taken place from India, and some rather large quantities have reached Liverpool from Bombay, under the name Muohwa oil. This oil is of soft, butter-like consistence and yellowish-green color, and is well adapted for soap-making and for machinery grease: see BASSIA.

The liquid vegetable oils are very numerous, and several are of great commercial importance. First in rank is olive oil, made from the ripe fruit of the common olive (*Olea*

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Europea). When good and fresh it is of pale greenish-yellow color, with scarcely any smell or taste, except a sweetish nutty flavor, much esteemed by those who use it. The finest qualities are the Provence oil (rare in this country) Florence oil, and Lucca oil. These are used for salads and for cooking. The Genoa is used on the continent for the same purposes; and Gallipoli, which is inferior, constitutes the great bulk of what is exported for cloth dressing, Turkey-red dyeing, and other purposes; the continental soap-makers also employ it extensively. The high price of the best qualities leads to much adulteration with poppy and other oils, but it is generally safe when in the original flasks as imported. The mode of obtaining the finest kinds is by gentle pressure of the fruit. The cake is afterward treated with hot water, from the surface of which an inferior quality is skimmed. The Gallipoli oil is obtained by allowing the olives to ferment in heaps, and then pressing them in powerful oil-presses; the cake or *marc* is then treated with water once or twice, until all the oil is removed; this inferior oil is darker in color, being a yellowish or brownish green. We receive the finest from Italy, and the commoner qualities from the Levant, Mogador, Spain, Portugal, and Sicily.

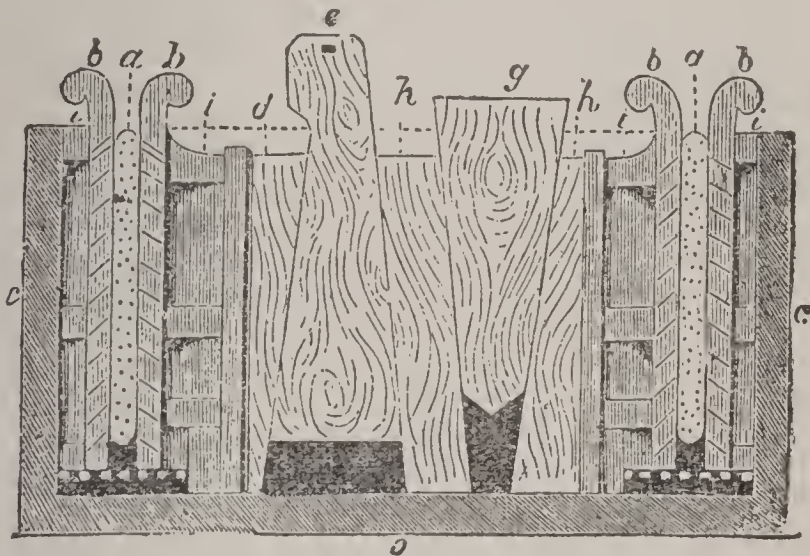


Fig. 1.

Nearly all the other liquid vegetable oils of this class are obtained from seeds, and as they are most of them treated in the same way one description will suffice. First, the seeds are ground—usually by vertical stones (see MILL, fig. 4)—into a kind of coarse meal, which is first warmed in pans, and then put in certain portions in woolen cloths or bags, so arranged as to be of uniform thickness; these are again wrapped in horse-hair cloths, and each parcel is placed between two flat boards slightly fluted on their inner sides, and then placed in the wedge-press (fig. 1). In this *a*, *a* are two flannel bags filled with the meal and inclosed in horse-hair bags, each flattened between the flat boards, *b*, *b*, *b*, *b*. They are set upright between the pressing-plates, *i*, *i*, *i*, *i*, one at each end of the press-frame, *ccc*,

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which is made of great strength, and often of cast-iron; its section is seen in fig. 2. Next is placed the wedge *d*; the other wedge, *e*, is then suspended by a cord in the position represented; *h, h* are then placed, as seen in the drawing; the main wedge, *g*, is lastly inserted, and the press is ready for action. The operation is very simple; a heavy wooden stamper, 500 to 600 lbs. weight, is raised by machinery about two ft., and allowed to fall upon the wedge *g*. This tightens all the other wedges and pressing-plates, and exerts a pressure of about 60 tons on each bag when fully

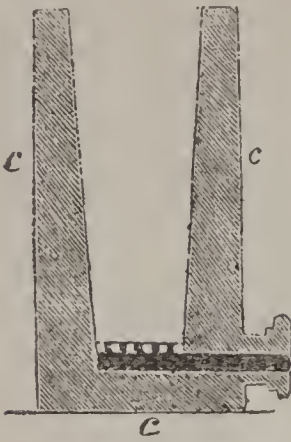


Fig. 2.

driven home. The pressing plates, *i, i, i, i*, are pierced with holes, and so are the plates *b, b, b, b*; and through these holes the oil trickles and passes away by the pipe, *k*, shown in fig. 2.

One of the chief seed-oils is that of Linseed (q.v.). It is of dark color, specific gravity .940, boiling point 600° F., and solidifies at a little below 0° F. It possesses the power of dissolving sulphur; on long heating it may dissolve one-quarter its weight, and become thick and dark-colored, forming what has been termed fatty balsam of sulphur. While much oil is made here, about 1,000,000 gallons are imported annually. It is the subject of considerable adulteration, rosin oil being the one perhaps most used. The oil is used in medicine as a laxative. Rape or colza oil is a name which covers the product of several cruciferous seeds, as rape, turnip, and other species of *Brassica*, radish, *Sinapis toria*, gold of pleasure, etc. The oil is clear brown and usually sweet, but with a mustard-like flavor; its illuminating powers are excellent, and it is also well adapted for wool-dressing. Very large quantities are made in Great Britain, chiefly from *Sinapis toria* and other Indian mustard seeds, imported under the name of Surzee seed. The imports of these seeds are occasionally as much as 60,000 quarters per annum. Hemp seed yields a green oil much used in making soft soap, especially in Holland. In Russia it is eaten with various kinds of food, and is greatly liked by all classes.

Cotton-seed oil is now made on an immense scale in the United States. It resembles olive oil, and is used as a substitute for or adulterant of it. It is also employed in the manufacture of soaps, candles, fictitious or vegetable lard, and other varied products. It has acquired a standing such as to raise the waste cotton seed from the gins of the southern states to a most important place in the industrial world.

The following are the names of a number of oils more or less in use. Palm-nut oil, a clear limpid oil from the hard nut of the oil-palm; this nut was formerly rejected as useless after the oil had been obtained from the fruit. Safflower-seed oil, from the seeds of *Carthamus tinctorius*; it constitutes the real Macassar oil. Sunflower-

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seed oil, from seed exported from the Black Sea provinces of Russia; a rapidly increasing trade is springing up in this excellent oil. Poppy-seed oil, from the seed of *Papaver somniferum*, largely exported from India; it is as sweet as olive oil, and is extensively substituted for it, especially in France, where also it is very largely cultivated. Gingelli-seed oil, from the seed of *Sesamum orientale*, an important Indian staple; the oil is much used for wool dressing, etc. Ground-nut oil, from the seeds of *Arachis hypogaea*, exported from w. Africa and India; this oil is adapted particularly for fine machinery, as it is not affected by cold. Niger, til, or teal-seed oil, from the seeds of *Guizotia oleifera*, much exported from Bombay. Croton oil, from the seeds of *Jatropha curcas*, largely used in wool dressing. The croton oil used in medicine is from *Croton tiglium*, of which only small quantities are exported; whereas of the other many hundred tons, besides seed in large quantity, are exported in one year. Another highly valuable medicinal oil, Castor-oil (q.v.), is of great commercial importance. Almond oil, used chiefly for perfumery purposes, is made from the kernels of the sweet and bitter almond; it is the most free from flavor and odor of any oil in use, notwithstanding that the essential oil of bitter almonds is so strongly flavored.

Oils made from the seeds of the following plants have some commercial value in various countries: *Madia sativa*; *Argemone Mexicana*; various species of gourds; garden cress (*Lepidium sativum*); tobacco, now extensively used in s. Russia, Turkey, and Austria; hazel-nuts; wal-nuts; nuts of stone pine; pistachio nut; tea-seed; this in China is a common painter's oil; the grape, from the seeds or stones, as they are called, saved from the wine-presses, used in Italy; Brazil-nut (*Bertholetia excelsa*); *Calophyllum inophyllum*, called Pinnacottay oil in India; *Melia azadirachta*, called in India by the names Neem and Margosa oil; *Aleurites triloba*, called in India, Country Almond oil, and much used for burning in lamps and torches; *Psoralea corylifolia*, called Baw-chee-seed oil. Ben-seeds (*Moringa Pterygosperma*); Bonduc-nuts, the seeds of *Guilandina bonduc* and *G. bonducella*.

The following oils, new to European and American commerce, were shown in the International Exhibition 1862. *India*.—Teorah oil, from the seeds of *Brassica erucastrum*; Capala oil, from the seeds of *Rottlera tinctoria*; Cardamom oil, from the seeds of *Elettaria Cardamomum*; Ildigee Badham oil, from the seeds of *Anacardium occidentale*, or Cashew-nut, now largely cultivated in India; Cassia-seed oil; Chaulmoogra oil, from the seeds of *Hydnocarpus odorata*; Cheerongee oil, from the seeds of *Buchanania latifolia*; Chemmarum oil, from the seeds of *Amoora rohituka*; Circassian-bean oil, from the seeds of *Adenantha pavonina*; Hoorhoorya oil, from the seeds of *Polanisia icosandra*; Custard Apple-seed oil, from the seeds of *Anona squamosa*; Exile oil, from the seeds of *Cerbera Thevetia*; Monela-grain oil, from the seeds of *Dolichos*

-OIN—OINTMENT.

uniflorus; Kanari oil, from the seeds of *Cunarium commune*; Khaliziri oil, from the seeds of *Vernonia Anthelmintica*; Malkungunnee oil, from the seeds of *Celastrus paniculatus*; Bakul oil, from the seeds of *Mimusops elengi*; Rana oil, from the seeds of *Mimusops Kaki*; Moodooga or Pulas oil, from the seeds of *Butea frondosa*; Nahor or Nageshur oil, from the seeds of *Mesua ferox*; Hone-seed oil, from seeds of *Calophyllum calaba*; Poonga, Caron, or Kurrmig oil, from the seeds of *Pongamia giubra*; Vappanley oil, from seeds of *Wrightia antidysenterica*; Babool oil, from seeds of *Acacia Arabica*; Gamboge oil, from seeds of the Gamboge-tree (*Garcinia pictoria*); Coodiri oil, from the seeds of *Sterculia fatida*; Kikuel oil, from the seeds of *Salvadorea persica*; Marouty, Surrate, or Neeradi-mootoo oil, from the seeds of *Hydnocarpus inebrians*; and Pundi kai oil, from the nutmegs of *Myristica malabarica*.

From Brazil.—Oils from the seeds of *Feuillea cardifolia*, *F. monosperma*, *Anisosperma passiflora*, *Cucurbita citrullus*, *Mabea fistuligera*, *Anda gomesii*, *Myristica bicuhiba*, *Carpotroche Brasiliensis*, *Dipterix odorata*, *Theobroma cacao*, *Acrocomia sclerocarpa*, *Nectandra cymbarum*, and from the fat of the alligator and the tapir, all for medicinal and perfumery purposes; and oils from the seeds of *Enocarpus Bacaba*, *Æ. patauí*, *Caryoca Brasiliensis*, and *Euterpe edulis*, used for culinary and lighting purposes.

From British Guiana.—Oil drawn from the stem of *Oreodaphne opifera*; it resembles refined turpentine. Wallaba oil, from the wood of the Wallaba tree (*Eperera falcata*), medicinal. Other oils have become known at various international exhibitions. For preparation of the essential oils, see PERFUMERY.

During the fiscal year ending 1889, June 30, the importations of oils into the United States were: whale and fish oils, 455,865 gallons, value \$115,862; other animal oils, 18,490 gallons, \$3,677; olive oil, 893,338 gallons, \$696,065; other fixed or expressed vegetable oils, 843,837 gallons, \$395,490; and volatile or essential oils, 630,232 gallons, \$146,481. The exports were: lard oil, 861,303 gallons, \$542,897; sperm oil, 98,832 gallons, \$69,628; other whale and fish oils, 483,208 gallons, \$127,412; all other animal oils, 558,080 gallons, \$377,919; cotton-seed oil, 2,690,700 gallons, \$1,298,609; linseed oil, 72,451 gallons, \$42,759; volatile or essential oils, value, \$188,603.

OIL-WELLS: OIL-TRADE: see PETROLEUM.

-OIN, suff. -oyn: in *chem.*, bearing a slight resemblance to; distantly connected with.

OINTMENT, n. *oynt'mént* [OF. *oignement*, an anointing, an unguent—from OF. *ongier*; F. *oindre*, to anoint—from L. *ungĕrĕ*, to anoint: F. *oint*, anointed—from L. *unctus*, smeared with oil, anointed]: any soft fatty substance or compound, used for smearing or anointing the body, especially a diseased part.

OIRIR-GAEL—OJIBWAYS.

OIRIR-GAEL: name which, in the early times of Scottish history, was applied to the Gaels of the coasts, in distinction from the Gall-Gael or islesmen. There was long a struggle for superiority between these two races, represented respectively by Somerled of the Isles and the later kings of Man, in which the latter were eventually successful, uniting under one head the dominion of Argyle and the Isles.

OISE, *wāz*: river in France, a chief affluent of the Seine; rising in the vicinity of Rocroy, in the n. of the dept. of Ardennes, and flowing s.w., joining the Seine at Conflans-Sainte-Honorine, after a course of 150 m., for the last 75 of which it is navigable. The fall of the river is very gradual, and its course extremely sinuous. It is connected by canals with the Somme, the Sambre, and the Scheldt, and forms one of the chief commercial routes between Belgium and Paris. It becomes navigable at Chauny.

OISE: department in n. France, bounded e. by the dept. of Aisne, and w. chiefly by that of Seine-Inférieure, which intervenes between it and the English Channel; area, 2,250 sq. m., of which two-thirds are in arable land; pop. (1901) 407,808. The principal rivers are the Oise—from which the dept. derives its name—and its tributaries the Aisne and Therain. The dept. is almost wholly included in the basin of the Oise; and as the course of that river indicates, the surface—consisting for the most part of extensive plains—has a general slope toward the s.w. The soil is in general fertile, and agriculture is well advanced. The products are the usual grain-crops, with an immense quantity of vegetables, which are sent to the markets of the metropolis. The dept. is divided into the four arrondissements Beauvais, Clermont, Compiègne, Senlis; cap. Beauvais.

OITI (*Moquilea tomentosa*): tree of the nat. order *Chrysobalanaceæ*—by many botanists regarded as a sub-order of *Rosaceæ* (q v.)—native of n. Brazil, and valuable on account of its timber, which is very good for ship-building.

OJIBWAYS, *ō-jīb'wāz*, or **CHIP'PEWAS**: tribe of N. American Indians of the great Algonquin family, living in scattered bands on the shores of Lakes Superior and Huron. The French explorers found them on the n. shore of Lake Huron 1640, a band of 2,000 being at Sault Ste. Marie, from which they were called Sauteux, a name they still bear among the Canadian French. Here the Jesuit Fathers established a mission 1642. The O. are a tall, well-developed, brave, hardy people, fond of war and hunting, but little given to agriculture. They have been at war with the Sioux, Iroquois, and Foxes from early times. War so reduced them that on the restoration of the French missions 1660 only 500 O. were found in four bands at the Sault. They were warm allies of the French to the close of French rule. They were allies of the British in the revolutionary war and in the second war with England; but made peace with the Americans by the

treaties of 1785, 89, 95, and 1816. Some had moved as far e. as Lake Erie, but gave up most of their lands in Ohio 1817. In 1822 there were 5,669 O. at Saginaw, 8,335 along the Lake Superior line from Mackinaw to the Mississippi, and 500 mixed with other tribes. The limits of their vast territory were fixed by treaty 1825. They gradually ceded their lands to the govt., and 1837 and 42 the United States agreed to pay them for 25 yrs. \$260,200 in money, goods, and other forms. By 1851 all but a few bands had been removed w. of the Mississippi river, while those remaining ceded all except moderate reservations. Their total number 1866 was 14,000, at various stages of civilization and improvement. The Lake Superior and Michigan bands were generally peaceful, industrious, and advancing in cultivation. The Red Lake band were chiefly hunters. The O. of the Mississippi river still possess large tracts of land, and many others are scattered on reservations amounting to more than 5,000,000 acres, as provided by treaties 1854-67. There are also many O. in Canada. The early Rom. Cath. missions are still maintained; there are also Prot. missions. The customs, traditions, language, and religion of the O. are better known than those of any other tribe.

O'KA: important commercial river of central Russia, principal affluent of the Volga from the south. It rises in the govt. of Orel, and flows generally n e., forming a common boundary between the govts. of Tula, Kaluga, and Moscow; and afterward flowing through the govts. of Riazan, Vladimir, and Nijni-Novgorod. It joins the Volga at the city of Nijni-Novgorod, after a course of 837 m. Its basin, estimated at 127,000 sq. m., comprises the richest and most fertile region of Russia. The principal towns on its banks are Orel, Beleff or Bielev, Kaluga, Riazan, and Murom; the most important affluents are the rivers Moscow, Kliasma, and Tzua. During spring the Oka is navigable from Orel to the Volga; but in summer the navigation is obstructed by sandbanks. It communicates with the ports on the Baltic, Caspian, and White Seas; and the cargoes annually shipped down the river amount in value to many millions of dollars.

OKE, n. *ōk* [Turk.]: Turkish and Egyptian weight, equal to about $2\frac{3}{4}$ lbs.: Hungarian and Wallachian measure of capacity, equal to about $2\frac{1}{2}$ pints.

OKEECHOBEE. *ō-kē-chō'bē*, LAKE: largest lake in the s. part of the United States: it is in the s. part of Fla., s. of Brevard co. and between Manatee and Dade cos.; greatest length about 40 m., greatest width 25 m.; greatest depth variously stated 12 to 20 ft; area 1,200 sq. m. It is for the most part inaccessible, owing to the swampy and impenetrable jungle which almost encircles it. It receives the waters of several streams, the Kissimee being the largest, and its waters are doubtless drained into the Everglades to the s., though no outlet has been discovered. But few fish are found. There are several low islands in it, which were formerly said to contain ruined buildings, but that report is not now believed. The lake has recently been partly drained.

OKEFINOKEE—OKEN.

OKEFINOKEE, *ō-kē-fī-nō'kē*, SWAMP: one of the largest swamps in the United States; in Chariton, Ware, and Clinch cos. in s. Ga., and Baker co. in n. Fla.; about 40 m. long, 30 m. wide; 500,000 acres. It has a large extent of heavy forest timber, other portions being partly overgrown with weeds, vines, and bushes. Alligators, rattlesnakes, and moccasins abound, and many species of game birds are found. The e. part is a lake about 12 m. wide, dotted with floating islands or *prairies tremblantes*.

O'KEL'LY, JAMES: 1757–1826, Oct. 26; b. Ireland. His youth is involved in obscurity. He was one of the early Methodist preachers in America, beginning his work in the middle of the revolutionary war. He was admitted into the travelling connection 1778, ordained elder at the organization of the M. E. Church 1784, and was a member of the council of presiding elders at Baltimore 1789, Dec. 1. His opposition to certain measures of the council did much to discredit such bodies; the second called by Bp. Asbury being poorly attended, and the third called was never held. O'K. labored hard for a general conference, and he succeeded in bringing it about. His desire to curtail the power of Bp. Asbury led him to offer a resolution in general conference 1792, that any preacher might appeal from the bp.'s appointment to the general conference. The resolution was lost, and O'K. with a few supporters withdrew from the conference and organized the Republican Methodist Church, afterward called the Christian Church. This secession gained 1792–98 about 8,000 members; but divisions and subdivisions reduced it; and 20 years later little remained of the organization. O'K.'s ministry was mainly in the s. counties of Va. and the border counties of N. C. He was vehemently opposed to negro slavery, protesting against it privately and from pulpit and press.

OKEN, *o'kèn* (originally OCKENFUSS, *ok'hèn-fós*). LORENZ: famous German naturalist: 1779, Aug. 1—1851, Aug. 11; b. Bohlsbach, Württemberg. He studied at Würzburg and Göttingen; became extraordinary prof. of medicine at Jena 1807, where his lectures on nat. philosophy, nat. history, zoology, comparative anatomy, vegetable and animal physiology, attracted much notice. In 1812 he was appointed ordinary prof. of nat. science; and in 1816 commenced the publication of a journal partly scientific and partly political, called *Iris*, which continued till 1848. The opinions promulgated in the *Iris* led to govt. interference, and O. resigned his chair and became a private tutor, giving his leisure to the composition of works on nat. history. In 1828, he obtained a professorship in the newly-established Univ. of Munich; but in 1832 exchanged it for another at Zürich, where he died. O. aimed at constructing all knowledge *a priori*, and thus setting forth the system of nature in its universal relations. The two principal works in which this idea is developed are *Lehrbuch der Naturphilosophie* (Jena 1808–11), and *Lehrbuch der Naturgeschichte* (3 vols. Leip. 1813–27). The former has been translated into English, and published by the Ray

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Soc. under the title *Elements of Physio-philosophy*. As O.'s philosophic system of nature was very peculiar and quite unlike anything that had preceded it, O. invented a nomenclature of his own, which, however, in many cases is forced and pretentious, composed of words mostly newly-coined and difficult to remember. It therefore found little favor, and O. was long regarded—particularly by French and English savans—as a mere dreamer and transcendental theorist; nor can it be denied that he is to a large degree such, infected with the worst vices of the school of Schelling, to which he belonged; but some of his ‘intuitions’—if we may so term his scientific suggestions—were remarkably felicitous, and in the hands of rigorous demonstrators, have led to great results. In his work *Die Zeugung* (On Generation, Hamb. 1805), he first suggested that all animals are built of vesicles or cells; in his *Beitrage zur vergleichenden Zoologie, Anatomie und Physiologie* (1806) he pointed out the origin of the intestines in the umbilical vesicle; and in the same year lighted accidentally upon the idea, since so prolific of results, that the bones of the skull are modified vertebræ. On account of this discovery he has been termed ‘the father of morphological science.’ That O., and not Göthe, was the original discoverer of the vertebral relations of the skull has been conclusively shown by Owen, in a valuable notice of O. in *Encyc. Britannica*.

OKHOTSK, *ō-chōtsk'* or *ōk-hōtsk'*, SEA OF: extensive inlet of the n. Pacific Ocean, on the e. coast of Russian Siberia. It is bounded n. by the wastes of Siberia, e. by the peninsula of Kamtchatka, and is partially inclosed by the Kurile Islands on the s. and by the island of Saghalien on the w. It is 1 000 m. in length, and 500 m. in breadth. The river Ud, which enters it on the n., is 400 m. long. Climate and position will probably prevent the Sea of O. from ever becoming the scene of much commerce. On its n. shore, at the mouth of the Okhota—from which it derives its name—is the small seaport of Okhotsk, lat. 57° 21' n., long. 143° 17' e. (pop. 236): it has been entirely superseded by the ports of Nikolaevsk and Vladivostok.

OKLAHOMA.

OKLAHOMA, *ōk-la-hō'ma* or *ōk-lā'hō-ma* ('beautiful land'): territory, opened to settlement 1889, very irregular in form, in the central portion of the Indian Territory; bounded n. by the Cherokee outlet; e. by the Iowa, Kickapoo, and Pottawatomie reservations; s. by the Cheyenne and Arapahoe reservations: the long and irregular s.w. line is formed by the Canadian river; and on the n.w. the Cimarron flows for a short distance; area 1,887,796 acres. There are high prairies crossed by numerous streams; but in some portions the water has alkaline properties. The rainfall is similar to that of w. Kan. There are a few points at which the soil is extremely poor and other localities in which there is good land but poor water. Some of the elevated plains are subject to drought, but there is a large extent of excellent farming land, especially in the vicinity of streams, and extensive areas suitable for pasturage. There is supposed to be considerable mineral wealth in O., but on account of the brief period it has been occupied by parties interested in learning its capacities, the extent of its riches in this direction is unknown. But it is certain that coal abounds in the valley of the Canadian river, and within the limits of O. there are deposits of iron and copper ores, and probably small quantities of silver and gold. Along the streams and in the larger valleys there is abundance of timber, and occasional patches of trees suitable for fuel or lumber appear on the prairies. During most of the year the climate is delightful. The mean annual temperature ranges from 55° to 60°, and in winter the mercury seldom falls as low as 20°. The Atchison Topeka and Santa Fé railroad passes through O. nearly n. and s., and other roads reach points not distant.

The O. region has been known to white men since 1662 when the Spanish explorer Don Diego Dionisio de Penalosa passed through it on his way to the north. He reported 'pleasing, peaceful, and most pleasant fields,' with trees and rivers, fruits and flowers. It was part of the Louisiana tract purchased of France 1803, and was included in the large area set apart for Indian tribes 1834. Though it was known that the early reports of the beauty and fertility of the region were exaggerated, it has long been regarded as a very desirable place for settlement, and many efforts have been made to secure legislation for the removal of the Indians and the opening of the country as public land. The govt. had obtained by purchase 1866 a large area from the Creeks and Seminoles (see INDIAN TERRITORY), on the claim that more land was needed on which to locate certain Indian tribes and freedmen; but had never used it for the purpose designated. Notwithstanding the treaty restrictions concerning the future occupants of the area, the claim was made and extensively circulated that all Indian rights to the land had been extinguished by purchase, and that, in common with all other public land, it was, under the Homestead Act as modified 1879, subject to pre-emption. It was also claimed that the land had been fenced and was occupied by parties who were keeping immense herds of cattle thereon; and that intending settlers desiring homes

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had stronger claims than the cattle owners. The statement was widely published that the O. region was unquestionably public land, and an unorganized company of people from the states adjoining the Indian Territory entered the domain 1879, Apr., intending to locate permanently. The pres. of the United States notified such intruders to withdraw, and in case of their refusal to obey ordered that they be removed. Another proclamation, issued the next year, was followed in a few weeks by an organized colony which left Arkansas City, Kan., 1880, Apr. 13, under the lead of Capt. David L. Payne, selected a location, laid out a town covering six sq. m., and began to build. The following month the company was removed from the territory by U. S. soldiers. After a brief period of imprisonment, Payne and his men were discharged and warned not to repeat the offense for which they had been committed. A few weeks later Payne and a still larger party were arrested on the forbidden ground, and treated as the previous party had been. Still another party, numbering about 200, with the same leader, prepared to enter the region in the winter of 1880-81, and was disbanded by U. S. troops. Payne was tried on a civil process 1881, and convicted. But the laws punished the crime only by a fine, which in this case, as it could not be collected, had no terrors for the offender. Several other expeditions, led by Payne, entered the region and were promptly expelled, but the number and enthusiasm of the invaders steadily increased. Surveys were made, town lots were laid out, and in the aggregate large sums of money were paid to Payne and other leaders of the movement. Certificates purporting to give the holder a legal claim to 160 acres of land in O. were sold to many people who did not design to locate there, but who purchased shares merely as an investment. Another class of certificates entitled the purchaser to certain rights in the organization of the government of the colony of which he was a member. After the death of Payne 1884, Nov. 28, the invasions were continued under the lead of W. L. Couch. An armed force defied the govt. officials; but was expelled 1885, and the leaders were arrested on a charge of insurrection; but the case against them was never brought to trial. Although the pres. issued a proclamation 1885 to the effect that the govt. would maintain the position already taken in regard to the settlement of the disputed area in the Indian Territory, incursions continued with considerable frequency till 1887. Meanwhile action had been taken by congress with a view to arrange with the Indians for the opening of the unoccupied lands for settlement under the Homestead Act. Terms were at length agreed on, and early in 1889 treaties were concluded with the interested tribes. A proclamation was then issued by the pres., stating the bounds of the new territory which was to be established, and declaring that 1889, Apr. 22, at noon, the unassigned lands would be open for settlement. Any person locating upon the territory before that date was to be debarred from ever acquiring a title to the land. Four days before the date of opening the lands, people

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were allowed to cross the Cherokee outlet. Vast crowds collected near the O. boundary, and when the pre-arranged signal of a bugle blast was given they rushed across the line. During the next few hours more than 50,000 people entered the territory, several towns were laid out, and thousands of tents and portable houses were erected. The laws concerning the securing of homesteads had been arranged by congress 1889, Mar. 2, to facilitate the entering of claims, land offices had been opened, and a govt. force of infantry and cavalry had been detailed to keep order and prevent the intrusion of parties before the appointed hour. The bringing of intoxicating liquors into the Indian Territory had been strictly prohibited, and the order was rigidly enforced. Though wild and impetuous, the entrance into the region was almost wholly free from the quarrels and bloodshed which had been feared. The civil govt. of the territory was vested in the U. S. court, which had jurisdiction over the Indian Territory. In several of the principal settlements, municipal organizations were formed, officers elected, and arbitrators chosen to act in place of courts till the latter could be legally constituted. In less than six months from the opening of the region to settlement, the town of Guthrie had six banks, one of which commenced doing business in a tent on the first afternoon the territory was opened, four daily newspapers, a system of water-works, and both electric light and street car companies. Before 1890, Jan., there had been established in O. 38 churches, 29 schools, and 22 newspapers. There were 28 towns, of which the larger were Guthrie (pop. 8,000) and Oklahoma City (pop. 5,000). A bill to establish a territorial govt. was considered in the senate 1890, Feb. 5, passed the house Mar. 13, and the act was approved by the pres. May 2. The pres. appointed George W. Steele of Ind. gov. of the territory May 8, and the appointment was confirmed by the senate May 14. J. C. Delaney was appointed receiver of the public money 1890, June 18. Pop. of the territory (1890) 61,834; (1900 census) 398,331. The area and pop. of the counties (1890) were: Beaver, 2,674; Canadian, 7,158; Cleveland, 6,605; Greer, 5,338; Kingfisher, 8,332; Logan, 12,770; Oklahoma, 11,742; Payne, 7,215. The chief cities are Oklahoma (pop. 4,151) and Guthrie (pop. 2,788). The territorial governors have been since 1890: Abraham J. Seay, 1892-3; William C. Renfrew, 1893-97; Cassius M. Barnes, 1897-1901; T. B. Ferguson, 1901-05. The territory is an exceptionally fine one for wheat and oats, as much as 44 bu. of wheat and 118 bu. of oats per acre having been raised on a few choice farms. Coal has been discovered at various points. Inexhaustible quantities of gypsum have been found in the n. part, and in various localities fine brick-clay and good building-stone. The e. portion contains much oak, walnut, hickory, elm, and other timber; the w. contains but little wood except along the streams. Two railroads travers the territory. The Oklahoma University (non-sectarian) has been established at Norman, and a normal school at Edmond.

OKRA—OLAND.

OKRA, n. *ō'krā*, and **OKRO**, n. *ōk'rō*: a plant of the W. Indies, whose pods are used as pot-herbs and for pickles; the *Abelmos'chus esculen'tus*. See **HIBISCUS**.

OKUBO, JUSAMMI TOSHIMICHI: Japanese statesman: b. Satsuma, about 1829. He held a position under the prince of Satsuma, was made a national councilor on the abdication of the tycoon 1868, visited America 1872, crushed a rebellion at Saga 1874, was afterward ambassador to China, and minister of the interior. He took much interest in schools and in the development of the empire. He was assassinated in Tokio, 1878, May 14.

OKUMA SHIGENOBU: Japanese statesman: b. Hizen, Kiushiu, 1837. He became familiar with the Dutch and English languages, entered political life 1868, in the dept. of foreign affairs, became assistant in the interior and financial departments 1869, and a councilor 1870. He was with the Formosa expedition, again became financial minister 1872, and attended the Vienna exposition 1873 as pres. of the Japanese commission.

-OL, suff.: in *chem.*, suffix terminating compounds which are true alcohols; thus phenol, phenylic alcohol.

OLAF, *ō'láf*, **SAINT**: one of the most revered of the early Norwegian kings: 995-1030 (reigned 1015-30). Having distinguished himself by gallant exploits, and made his name a terror in several warlike expeditions on the coasts of Normandy and England, he succeeded 1015 in wresting the throne of Norway from Eric and Svend Jarl. The cruel severity with which he endeavored to exterminate paganism by fire and sword alienated the affection of his subjects, many of whom sought security from his persecution in the territories of Knut or Canute the Great, King of Denmark; and it was only through the powerful aid of his brother-in-law, the Swedish Anund Jacob, that his authority could be upheld. O.'s hot-headed zeal, however, after a time exhausted the patience of the people, who hastened to tender their allegiance to Knut, on his landing in Norway 1028, when O. fled to the court of his brother-in-law, Jaroslav of Russia, who gave him a band of 4,000 men, at the head of whom he returned 1030 and gave Knut battle at Stiklestad, where O. was defeated by the aid of his own subjects and slain. The body of the zealous king, which had been left on the field of battle and buried on the spot by a peasant, having (as was believed) begun to work miracles, his remains were carefully removed to the cathedral of Trondhjem, where the fame of their miraculous power spread far and wide, attracting pilgrims from all parts of the Scandinavian peninsula. O. was solemnly proclaimed patron saint of Norway in the succeeding century; and till the Reformation his name continued to gather a rich assemblage of mythical legends and popular sages, the memory of which still lingers in the folk-lore of Norway. In 1847 the order of Olaf was created, in honor of the saint, by King Oscar I. of Sweden and Norway.

O'LAND: see **CELAND**.

OLBERS, *Olberss*, HEINRICH WILHELM MATTHIAS: famous German physician and astronomer: 1758, Oct. 11—1840, Mar. 2; b. Arbergen, a small village of Bremen. He studied medicine at Göttingen 1777–80, and commenced practice at Bremen, where, both as physician and as man, he was highly esteemed. In 1811 he was a successful competitor for the prize proposed by Napoleon for the best ‘Memoir on the Croup.’ O. wrote little on medical subjects; for from 1779 all the leisure which he could abstract from professional occupations was given to enthusiastic study of astronomy. The first thing which brought him into notice was his calculation of the orbit of the comet of 1779, performed by him while watching by the bedside of a sick patient, and was found surprisingly accurate. Comets were the chief objects of his investigation, and he seems to have had an irresistible predilection for these vagabonds of the solar system, which his two important discoveries of the planets Pallas (1802) and Vesta (1807) could not diminish. In 1781 he had the honor of first rediscovering the planet Uranus, which had previously been supposed, even by Herschel himself, to be a comet, and which had been sought for in vain. He also discovered five comets in 1798, 1802. 04, 15, and 21, all of which, except that of 1815 (hence called *Olbers’ comet*), had been some days previously observed at Paris. His observations, calculations, and notices of various comets, which are of inestimable value to astronomers, were published in the *Annuaire of Bode* (1782–1829), in the *Annuaire of Encke* (1833), and in three collections by the Baron de Zach. Most of these calculations were made after a new method, discovered by himself, for determining the orbit of a comet from three observations: a method which for facility and accuracy he considered greatly preferable to those then in use. A detail of it appeared in a journal published at Weimar (1797), and a new edition by Encke 1847. O. was one of that small band of astronomers which included Schröter, Gauss, Piazzi, Bode, Harding, etc., who in the first ten years of the 19th c. devoted their energies to the observation of those planets which were coming to light between Mars and Jupiter. As above stated, two of them, the second and fourth in order of discovery, were detected by O. himself; and the general equality of the elements of the four planetoids led him to propound the well-known theory that these and the other Planetoids (q.v.) since discovered are but fragments of some large planet which formerly revolved round the sun at a distance equal to the mean of the distances of the planetoids from the same luminary. It was this theory which led him, after the discovery of Pallas, to seek for more fragments of the supposed planet, a search resulting in the discovery of Vesta. O. also made important researches on the probable lunar origin of meteoric stones, and invented a method for calculating the velocity of falling stars. He died at Bremen; and 1850 his fellow-citizens erected a marble statue in honor of him. O., as a writer, had great powers of thought, with equal clearness and elegance of expression. His valuable dissertations are scattered through various journals.

OLCOTT—OLDBURY.

OLCOTT, SIMEON: 1735, Oct. 1—1815, Feb. 22; b. Conn.: lawyer. He graduated at Yale College 1761; settled in Charlestown, N. H.; became chief-justice of the common pleas court 1784, judge of the superior court 1790, and chief judge of the latter 1795; and was U. S. senator 1801–5.

OLD, a. *ōld* [AS. *eald*; Ger. *alt*; Goth. *althais*, old: radical meaning probably *grown up*—from Goth. *alan*; Icel. *ala*; L. *alēre*, to nourish]: far advanced in years; aged; used of any length of time, as, how *old* is he? he is two years *old*; decayed or injured by time or long use; out of date; not new or fresh; in *OE.*, more than enough; superabundant. **OLDNESS**, n. *-nēs*, state of being old. **OLDISH**, a. *-ish*, rather old. **OLDEN**, a. *ōldēn*, applied to time long past; ancient. **OLD-FASHIONED**, a. antiquated; formal. **OLD AGE**, decline of life: advanced years. **OLD-CLOTHESMAN**, a man who collects half-worn-out garments, and old attire of all kinds, to be sold when repaired and renovated. **OLD MEN'S WORKINGS**, mines or underground excavations that have been formerly worked. **OF OLD**, long ago; in anc. times. **OLD BACHELOR**, an unmarried man somewhat advanced in years. **OLD MAID**, an unmarried woman no longer young. **OLD SAID**, long since said. **OLD SCHOOL**, a party belonging to a former time, or a party having the character and opinions appropriate to former times. **OLD SONG**, a mere trifle; a nominal price. **OLD WIFE**, a prating old woman; a man having some of the characteristics and habits peculiar to old women; in *Scot.*, an apparatus for curing smoky chimneys. **OLD RED SANDSTONE**, the whole series of strata below the Coal-measures and above the Silurian system (see below). **OLD TESTAMENT**, the earlier portion of the Scriptures, B.C. **OLD STYLE**, the old mode of reckoning time according to the Julian year of 365 $\frac{1}{4}$ days—by the New or Gregorian Style, the year is 365 d. 5 h. 49 m.; there is now a difference of 12 days between New and Old Styles—thus, while the former is Jan. 13, the latter is only Jan. 1. **OLD TOM**, a kind of strong London gin; a particular manufacture of Scotch whisky, matured by long keeping. **OLD WORLD**, Europe, Asia, Africa, as distinguished from America or the New World.—**SYN.** of 'old': ancient; antique, antiquated, aged: elderly; obsolete; pristine; original; primitive; old-fashioned.

OLDBURY, *ōldber-i*: important manufacturing town of England, co. of Worcester, 29 m. n.n.e. of the city of Worcester, 5 m. w. of Birmingham; on the river Tame, and on the Birmingham canal, and the London and Northwestern and the Great Western railways. It contains numerous churches, meeting-houses, and schools. The extension of the iron trade has greatly increased its size and prosperity in recent years. There are coal and iron mines in the neighborhood: and in the town, iron, steel, locomotive engines, mills, edge tools, draining pipes, etc., are made. The Stour Valley railway passes close by the town, and there is a station here. Pop. (1871) 16,410, (1881) 18,821.

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